EDITORIAL STAFF

E. L. SHANER
Editor-in-Chief

E. C. KREUTZBERG
Editor

A. J. HAIN
Managing Editor

E. F. ROSS
Engineering Editor

GUY HUBBARD
Machine Tool Editor

D. S. CADOT
Art Editor

ASSOCIATE EDITORS

G. H. MANLOVE — J. D. KNOX
W. G. GUDE — G. W. BIRDSALL
W. J. CAMPBELL

New York
I. H. SUCH — B. K. PRICE
L. E. BROWNE

Pittsburgh — *Chicago*
R. L. HARTFORD — J. F. POWELL

Detroit — *Washington*
A. H. ALLEN — L. M. LAMM

London
VINCENT DELPORT

BUSINESS STAFF

G. O. HAYS
Business Manager

C. H. BAILEY
Advertising Service

New York . . E. W. KREUTZBERG, B. C. SNELL
Pittsburgh . . . S. H. JASPER
Chicago . . . L. C. PELOTT, W. F. O'DELL
Cleveland . . . R. C. JAENKE, D. C. KIEFER

J. W. ZUBER
Circulation Manager

MAIN OFFICE

Penton Building, Cleveland

BRANCH OFFICES

New York . . . 220 Broadway
Chicago . . Peoples Gas Building
Pittsburgh . 1800 Koppers Building
Detroit . . 1010 Stephenson Building
Washington . National Press Building
Cincinnati . . . 282 Sinton Hotel
San Francisco . . 2413 Milvia St.
Berkeley, Calif., Tel. Berk. 7354-W
London . . . . Caxton House, Westminster, S.W. 1
Berlin . Berlin, N.W. 40, Roonstrasse 10

• ● •

Published by THE PENTON PUBLISHING CO., Penton Building, Cleveland, Ohio. JOHN A. PENTON, Chairman of Board; E. L. SHANER, President and Treasurer; J. R. DAWLEY and G. O. HAYS, Vice Presidents; F. G. STEINEBACH, Secretary.

Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers' Association.

Published every Monday. Subscription in the United States, Cuba, Mexico and Canada, one year $4, two years $6; European and foreign countries, one year $10. Single copies (current issues) 25c.

Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879. Copyright 1938 by the Penton Publishing Co.

STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

Contents

Volume 103—No. 21 **November 21, 1938**

READER COMMENTS 9
AS THE EDITOR VIEWS THE NEWS 13
NEWS
- Auto Demand Exceeds Expectations; Oil Expansion To Spur Steel Buying 15
- Founders See Business Outlook Improved 17
- Avoid Reaction, Prentis Cautions 18
- Steel Gains Advantage from Anglo-American Trade Pacts 19
- Enameling; Air Conditioning; Galvanizing 20
- Labor News 21
- Steelworks Operations for Week 21
- Men of Industry 22
- Obituaries 23
- Consumers' Nine Months Net Profit 5.3 Per Cent of 1937 26
- Irvin Works To Open Dec. 15 27
- Meetings 27
- European Steel Feels New Impetus; French Position Insecure 32
- Mechanization Defended; "Social Inventiveness" Emphasized 33
- Activities of Steel Users and Makers 91

WINDOWS OF WASHINGTON 25
MIRRORS OF MOTORDOM 29
EDITORIAL—Employment Incentives Are Needed 34
THE BUSINESS TREND
- Activity Index Continues Upward Movement 35
- Charts and Statistics 35-37

TECHNICAL
- Houses for Colonial Village 38
- Redesigns Coal Stokers 41
- British Institutes Hold Canceled United States Meetings in London 49
- Design Flexible Type of Fabricated Floor Plate 58

PROGRESS IN STEELMAKING
- Teeming Temperatures 44

MATERIALS HANDLING
- Mechanical Charging 46

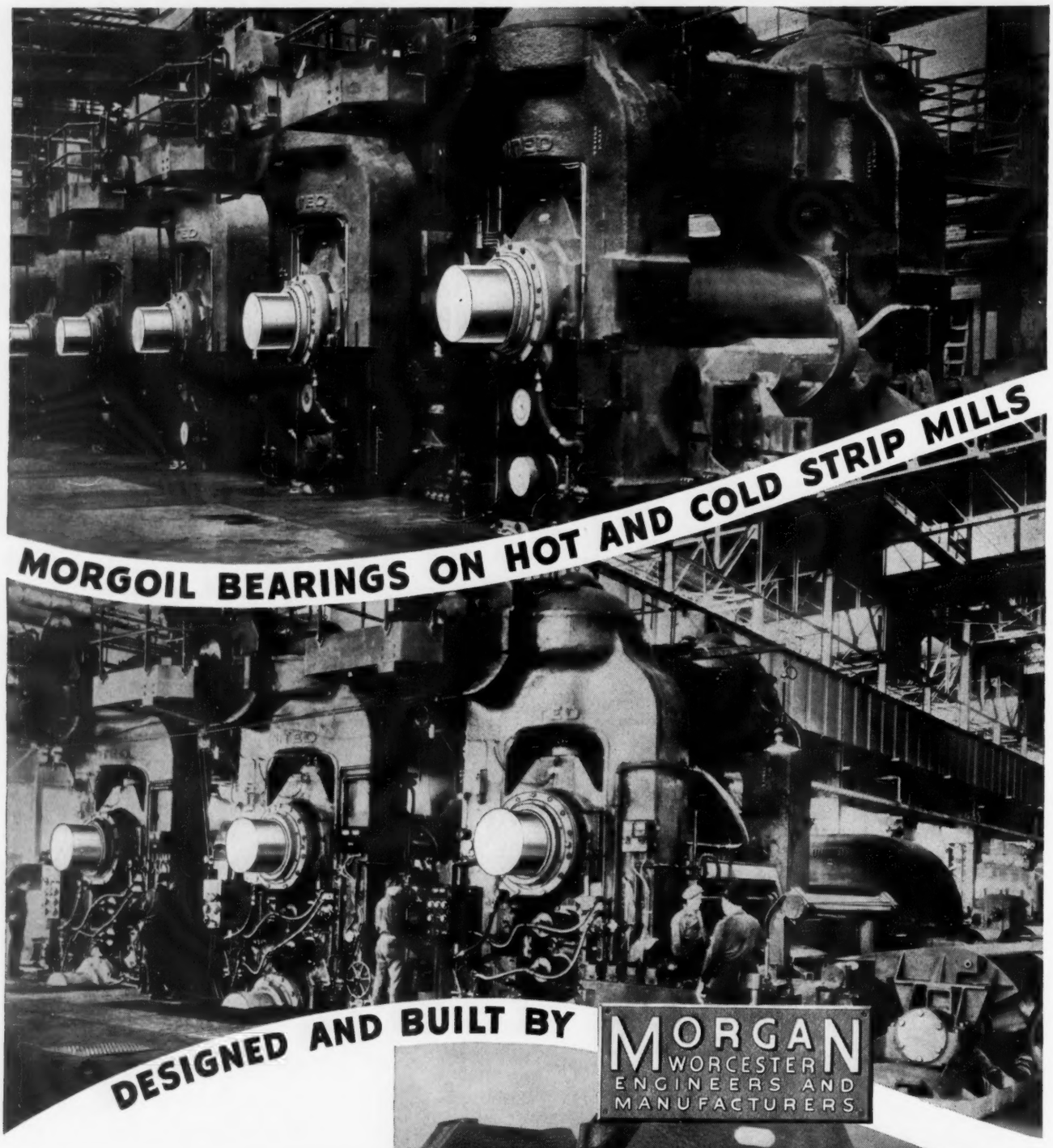
METAL FINISHING
- Paint Progress 50
- Finishing Forged Rolls Is Delicate Operation 68

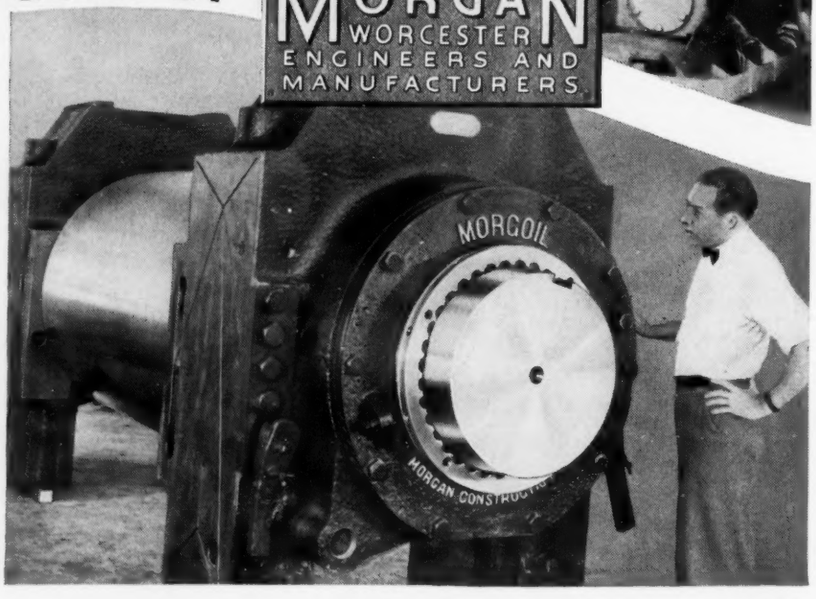
JOINING AND WELDING
- Diagonal Grids 54

INDUSTRIAL EQUIPMENT 61
HELPFUL LITERATURE 69
MARKET REPORTS AND PRICES 71
- The Market Week 72

BEHIND THE SCENES 82
CONSTRUCTION AND ENTERPRISE 93
INDEX TO ADVERTISERS 100

PRODUCTION · PROCESSING · DISTRIBUTION · USE





Strip rides on Series 50″-90 MORGOILS in one of the largest mills ever built. Eighty-eight of these bearings, each with a capacity of 4,050,000 lbs., were provided for the hot and cold strip mills shown above. An unbroken film of oil, on mirror finished surfaces, minimizes friction and wear, assuring economy of power.

Top view shows MORGOILS in the Hot Mill; middle view in the Cold Mill; while bottom view shows two smaller MORGOILS supporting a roll 49″ diameter, 96″ face. MORGAN CONSTRUCTION COMPANY, Worcester, Mass.

R 41-B

As the Editor Views the News

■ MOST notable manifestation last week was a further upsurge in the feeling of business confidence engendered by the results of the elections of Nov. 8. Believing that a majority of the people in this country are in favor of encouraging business, some industrial spokesmen now are speculating as to how soon we will enter a "boom" era. Actually, business registered another mild but encouraging advance during the week. Steel production (p. 21) moved up 1½ points and now is at 63 per cent of ingot capacity. STEEL'S index of industrial activity moved up (p. 35) to a new high for this year and is well above the level of a year ago. At Detroit, sales managers are pinching themselves to make sure (p. 15) that the huge volume of orders for 1939 automobiles is not a dream.

. . .

Security For Labor

The automobile industry is taking the lead in solving problems involving security of workers. Instead of moving production quickly to a peak, it is following conservative schedules so as to operate evenly over a long period, thus making for steady employment. It looks forward to maintenance of the current rate through the first two months of next year. After that there may be some tapering off for it is not likely that the country could absorb the more than 4,000,000 vehicles that would be produced in a year at the current rate. Another signal move in the direction of security of employment and compensation is the announcement by General Motors Corp. (p. 20) of two plans by which 150,000 employes are assured of pay during layoffs.

. . .

Study New Trade Pacts

The government bought iron and steel and their products in the amount of $4,590,278.69 (p. 26) during the week ended Nov. 12. Army and navy needs (p. 25) are large. . . . Sharp upturn in the oil industry's steel requirements is presaged (p. 15) by announcements of modernization and expansion programs. . . . There is no unanimity of opinion in American industry as to how the new trade agreements between Great Britain and Canada and the United States (p. 19) will affect varying interests. . . . A machine tool maker must pay overtime for hours in excess of 44 per week (p. 26) and the fact an employe was absent the preceding week is not a factor. . . . First sheet, tin plate and merchant bar mill in Ireland (p. 30) will have American equipment.

. . .

Steel in New Houses

New low-cost housing development at Clairton, Pa., reveals a number of new uses for steel in standard building parts; the 300 houses there (p. 38) will absorb about 3750 tons of this metal. . . . Sweeping design changes have been made in one line of automatic coal stokers for residence heating; some were made as a result of laboratory tests while others (p. 41) were developed to simplify production on a quantity basis. . . . An authority discusses the place of the optical pyrometer as a control instrument for improving open-hearth practice (p. 44) and reveals best methods of procedure. . . . A large foundry (p. 46) is deriving gratifying results from its completely mechanized yard handling and cupola charging system. It saves heavy work, speeds operations and aids control.

. . .

Steelmakers In London

Papers prepared by American steelmakers for the meeting scheduled to be held in New York early in October, but canceled because of the European war scare, were presented (p. 49) Oct. 26 at a joint meeting in London of the Iron and Steel institute and the Institute of Metals. . . . Many ideas regarding paint and varnish coatings on metals have been changed radically; a well-known authority (p. 50) brings the picture up-to-date. . . . Graphite products now are available in smaller particle sizes (p. 53), with improved suspension characteristics. . . . Savings in the cost of structural steelwork are claimed (p. 54) for all-welded plane grids comprised of a diagonal system of beams of identical cross-section, arranged in two parallel sets, equally spaced and intersecting at 90 degrees.

E. L. Shaner

Valuable Data at No Extra Cost

Now you can be sure . . .

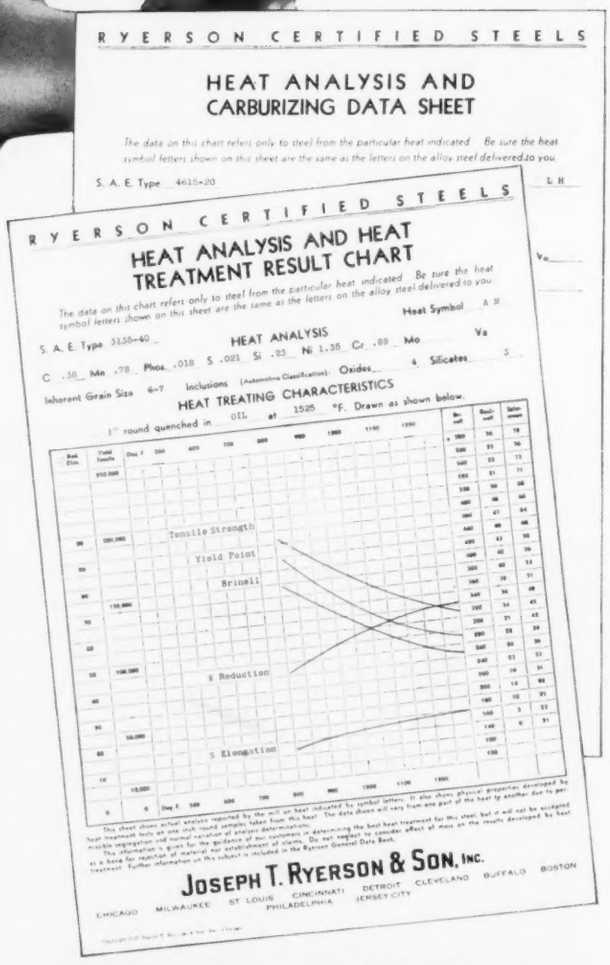
You can depend on better results in less time when your heat treater is guided by the Ryerson alloy data charts. These charts show him the exact properties of the steel with which he is working and show him how to get the desired results. He does not have to test. He takes no chances. Spoilage is eliminated and a sound dependable job of high accuracy and uniformity is assured.

In addition to saving in production costs, the Ryerson Certified Alloy Plan benefits the Purchasing Department, as they can keep a detailed record of the exact analysis of every alloy purchased. Thus it is possible to duplicate particularly desirable close range specifications on repeat orders.

The Metallurgical Department is benefitted for they can call for any reasonable physical requirement and be sure the Heat Treater can produce the required properties.

Ryerson Certified Steels also include carbon, tool and stainless steels that meet definite quality standards. They offer many advantages to steel users. Let us send you a booklet which tells the complete story.

Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.


RYERSON CERTIFIED STEELS

HEAT ANALYSIS AND CARBURIZING DATA SHEET

The data on this chart refers only to steel from the particular heat indicated. Be sure the heat symbol letters shown on this sheet are the same as the letters on the alloy steel delivered to you.

S. A. E. Type 4615-20

RYERSON CERTIFIED STEELS

HEAT ANALYSIS AND HEAT TREATMENT RESULT CHART

The data on this chart refers only to steel from the particular heat indicated. Be sure the heat symbol letters shown on this sheet are the same as the letters on the alloy steel delivered to you.

Heat Symbol

S. A. E. Type 3130-40

HEAT ANALYSIS

C .38 Mn .78 Phos. .018 S .021 Si .25 Ni 1.35 Cr .69 Mo Va

Inherent Grain Size 6-7 Inclusions (Automotive Classification): Oxides 4 Silicates 5

HEAT TREATING CHARACTERISTICS

1" round quenched in OIL at 1525 °F. Drawn as shown below.

Tensile Strength

Yield Point

Brinell

% Reduction

% Elongation

JOSEPH T. RYERSON & SON, INC.

CHICAGO MILWAUKEE ST. LOUIS CINCINNATI DETROIT CLEVELAND BUFFALO BOSTON PHILADELPHIA JERSEY CITY

Special Ryerson Data Sheets

While two heats of an alloy steel may be almost identical in chemical analysis, one may be much more responsive to heat treatment. For this reason, Ryerson data sheets show *actual* heat treatment results.

Two types of data sheets are used, one for the carburizing steels which gives complete analysis and the results of carburizing tests. The other, which is for the higher carbon steels, shows actual quenching and drawing results. Both charts are accurate guides that help the heat treater save time in securing desired properties.

RYERSON *Certified* STEELS

Auto Demand Exceeds Expectations; Oil Expansion To Spur Steel Buying

DETROIT

■ AUTOMOBILE company executives profess to be little short of amazed at the "torrent" of new orders which has greeted official appearance of new models. Last week at auto shows in leading cities public interest was sharply in contrast with the apathetic attention which greeted 1938 models. And crowds were not merely interested; they were in a buying mood.

The result has been a cautious but steady inching up of production schedules, with sales officials pinching themselves to see if they were not dreaming about the piles of orders relayed to factories. The sudden improvement in production was entirely unexpected and numerous cars have had to be delivered minus certain accessories, such as heaters, defrosters, radios and the like. The upswing caught some of the accessory people unawares and they have been hard pressed to keep up with factory demands.

It is probably safe to say that right now the automotive industry could operate at its present rate—around 90,000 cars and trucks per week—for the next three months, even if retail sales should drop to nothing, and still end up with only normal dealer stocks. But, of course, retail sales will experience no such slump; in fact the reinforcement of coming Christmas buying should provide the impetus to carry the industry well into the first half of 1939.

Adding to the enthusiasm, government and financial prognosticators are now forecasting a business boom to break within the next 60 to 90 days. Certainly the automotive industry now is laying the groundwork for such an upswing. Some smart observers here are circling Feb. 15, 1939, on their calendars as the inauguration date of the coming "boom."

Last week all four Chrysler divisions authorized parts suppliers to step up releases, and assembly schedules are now on a five-day week basis to handle production increases.

(For additional current news of the industry see "Mirrors of Motordom", p. 29.)

What About Steel? What About Motors?

■ **Charles M. Schwab, left, chairman, Bethlehem Steel Corp., was among more than 300 industrial and business leaders who attended a luncheon given by Alfred P. Sloan Jr., right, chairman of General Motors, in New York. Pointing out the automobile has not yet reached its peak, Charles F. Kettering, General Motors vice president in charge of research, spoke on "The Motorcar in the World of Tomorrow." He paid tribute to steel, rubber and petroleum industries as the "three legs upon which the motorcar industry is built"**

OIL COMPANIES MAP VAST MODERNIZATION PROGRAMS

■ RECENTLY announced modernization and expansion programs by major oil companies presage a sharp upturn in the oil industry's steel requirements.

Several of these resemble the programs of ten years ago when oil, gas, and water requirements, as a group, took about 9 per cent of total finished steel production, ranked as fourth largest steel consumer.

Indicating the size of projected programs: Standard Oil Co. of New Jersey will spend $195,000,000; Socony-Vacuum Oil Co. has earmarked $24,000,000 to modernize eight plants; Sun Oil Co. is constructing two plants costing $11,000,000.

These expenditures call attention to the oil industry's constant race to keep ahead of obsolescence and to keep pace with a steadily increasing demand for its products.

Following the expansion and modernization programs of the 20's, the oil industry found itself overbuilt in the depression of the early 30's. For a while it experienced lean earnings, and capital expenditures were curtailed.

With a strong increase in demand for petroleum products starting late in 1934, earnings improved substantially, but because of the undistributed profits tax and other factors,

important rehabilitation programs were deferred.

The result is that many companies now are finding much equipment has become obsolete, largely because of new developments in the producing, refining and marketing branches.

Meanwhile demand continues upward. American Petroleum institute forecasts 1939 domestic gasoline consumption will increase 4 per cent over 1938. Demand for home furnace oils is expected to increase 15 per cent.

Because of the many improvements in refining technique indications are that there will be widespread changes in that branch of the industry in the next few years. Socony-Vacuum is installing an entirely new process which will enable it to make economically a gasoline of higher octane rating and at the same time control more effectively the products it obtains from crude oil. Sun Oil is launching a similar program. Both companies expect their new plants to be in operation in the first half of 1939.

Making a high octane gasoline for use in airplanes has been an increasing problem. This fuel must be processed differently from the ordinary motor fuel, and from selected crudes.

No Danger of Gasoline Shortage

The projected plants will be capable of making either aviation gasoline or ordinary motor fuel and will remove the danger of a shortage of aviation gasoline in event of war.

Financial conditions now are more favorable for oil industry modernization and expansion than they were a decade ago. Then money rates were high; now they are comparatively low. Some companies already have obtained the funds necessary for their program, but generally the industry has not yet entered the capital market.

To what extent the anticipated expansion will be financed from current earnings and from borrowings will depend largely on the individual companies.

Many companies are expected to finance their programs along the lines laid down recently by Standard Oil of New Jersey. This involves raising of funds by sale of bonds and also by payment of a portion of dividends in stock, conserving cash for the necessary modernization.

Steel Industry Stands To Gain

Not only does steel stand to gain by refinery rehabilitation but also by further development of the oil industry's own transportation system.

During the past 12 months, two freight rate increases have accentuated the desirability of building up the truck, tanker, barge and pipe line systems. These already are extensive and are estimated to carry two out of three gallons of refined petroleum products to market. Pipe lines alone represent an investment of $3,500,000,000, according to a survey by the *Oil and Gas Journal*. Mileage: crude oil, 115,000; natural gas, 180,000; gasoline, 6000; natural gasoline, 15,000.

While major pipe line systems have been operated at less than capacity during the early part of 1938, there has been some extension of gathering lines and a few major lines laid. A substantial tonnage of steel will be required for those contemplated for 1939.

New tanker and barge construction has been active and still is going forward. From July 1, 1937 to date, 50 barges, of a total 24,881 gross tons, have been built, according to Steamship Inspection service.

Eighteen tankers have been completed so far this year. Sixteen average 8000 gross tons each, the other two being 2300 and 1700 tons. Seventeen others, averaging 8000 tons, are under construction, according to the National Council of Shipbuilders.

Greatest interest in new tanker construction centers around the 12 high-speed ships to be constructed for Standard Oil of New Jersey in co-operation with the federal government. These will be capable of 18 knots an hour, have an overall length of 551 feet, cargo capacity of 145,000 barrels. They will embody national defense features and the federal government will pay part of their cost.

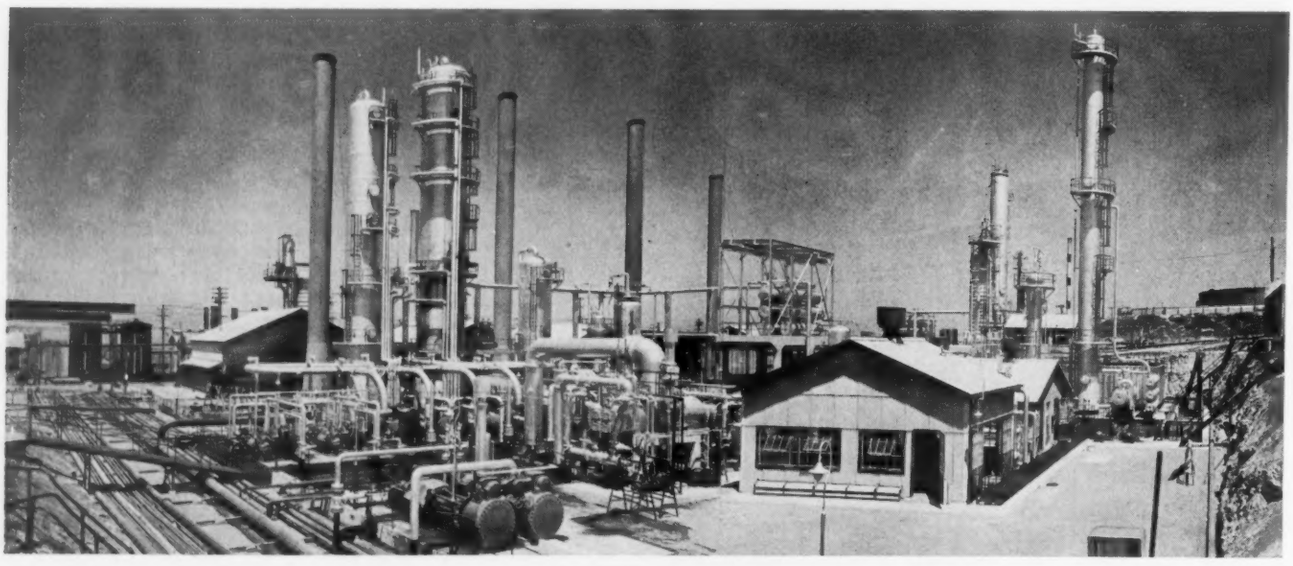
Under American registry at present are 418 tankers of 1000 gross tons or more, according to Lloyd's Register. These do not include vessels owned by American companies under foreign flags, nor craft under 1000 tons, thus eliminating most of the river boats and barges. Total gross tonnage of the 418 is 2,759,642.

Greater Use of Inland Waterways

Inland water movement of gasoline and other refined petroleum products is being extended into new areas and is increasing in volume. Seventy per cent of the population is estimated to live within 50 miles of navigable waterways. Because water transportation is cheap, the oil industry has come to realize potentialities of low-cost barging and short-haul trucking, as marketing margins have decreased.

How inland waterway and coastal movement of petroleum products

(*Please turn to Page* 90)



■ **Oil industry modernization promises a larger market for steel and alloys for several years, according to leaders in the industry. Typical of modern plants is Richfield Oil's $5,000,000 refinery at Watson, Calif., completed this year**

Founders See Business Outlook Improved

By Conservative Political Trend

■ COMPARING the Wagner act to the Volstead act, F. R. Hoadley, president, National Founders' association, predicted the Wagner act also would be self-destroying in speaking before the association's forty-second annual convention in New York, Nov. 15-16.

"As in the Volstead act," said Mr. Hoadley, "we confer unusual powers on our administrative agency, the labor board. Its finding of fact, if accompanied by evidence, may not be upset by the courts and it may conduct its hearings and inquisitions in a way that would shame a police court.

"Upholding this state of affairs is the same kind of support which upheld the Volstead act for so many years, namely, a perfectly reprehensible alliance between the professional union leader whose only interest is in collecting dues, and the politician whose principal interest is in getting votes. That it will fail, as did the Volstead act, is as sure as the sun will rise tomorrow."

Mr. Hoadley went on record as favoring simplified reports to employes on the state of their business. "Some employers," he pointed out, "are winning their employes' confidence by telling their story in a simple, understandable way. This is one plan which is perfectly consistent with the Wagner act and Senator Wagner has been quoted as saying so."

The speaker found irony in the fact that a few years ago British employers came to America to learn how industry here could pay two and a half times the wages of British industry and still compete in world markets and that recently the American government had sent a commission to England to find out how the Britons get along with their employes without a Wagner act.

He pointed out that in the last two years, 42,000,000 work days were lost by industrial strikes.

Encouraging, however, is the present conservative trend. "Leave business free to go ahead, get production again at top speed, and the American workman will put his shoulder to the wheel and do his full share.

"Just tell me when we are going to remove the restrictions which prevent close co-operation between management and employes; when we are going to stop putting shackles on production; when we are going to be sure of sound currency; when our government expenditures are going to be brought in line with government income, based on a fair tax burden, and I will tell you when this country will enter the greatest period of prosperity it has ever known," he concluded.

F. R. Hoadley
Re-elected president, National Founders' association

Mr. Hoadley was re-elected president of the association. Others re-elected: W. D. Hammerstadt, Rockwood Mfg. Co., Indianapolis, vice president; J. M. Taylor, Chicago, secretary and treasurer. A. E. McClintock, Chicago, was renamed commissioner.

Commissioner McClintock warned against a possible scarcity of skilled mechanics as business continues upward. Curtailed apprentice training during the depression still is evident, and the past year was another setback, he said.

Conservative labor factions realize unreasonable demands, coupled with agitation and strikes, mean great loss to them and that forced concessions are of no permanent good unless economically sound.

He advised foundrymen to keep their own houses in order. "They should see that the best possible working conditions are maintained, that wage rates are fair and equitable, and that nothing over which they have control leads to petty grievances, which in turn lead to greater trouble."

James A. Emery, general counsel, National Association of Manufacturers, stressed the need for greater stability in government and for drastic curtailment in federal expenditures.

Referring to the pending monopoly investigation, he said business and industry has nothing to fear if the investigation is factual, but has everything to lose if it were not and if findings are subject to unfair interpretation.

"Uplift May Impel Greater Expansion"

Outlook for business for the next six to nine months is reasonably encouraging, in the opinion of W. W. Cumberland, economist, Wellington & Co., New York. This prediction was made to the Founders on the assumption of continued peace and a system of free enterprise.

For the long pull, potential uncertainty prevents accurate prediction, with the result many industrialists and investors do not feel justified in planning too far ahead. Trends in midterm elections, he said, portend a drift toward more conservative political policies which may give additional momentum to the lift which appears to be ahead.

Mr. Cumberland cited the sharp decline in reinvestment in new enterprise and expansion of productive facilities. The total for the past nine

years was only 16 billions, compared with about 80 billions in nine years before 1929.

Present industrial activity, he reported, now is on a consumption level of 95, about normal; but for heavy industrial and building, the index is well below this figure.

Commodity prices in recent weeks have moved sidewise and no great changes during the next few months are expected by the economist.

While money rates and banking credit have become attributes of government, they are less a factor in forecasts. Mr. Cumberland said interest rates likely will be low on money bonds.

Railroads' greatest need is traffic, said the speaker, adding that the general view of the carriers' plight is somewhat over-pessimistic. No increases in costs are in sight; some equipment orders should be forthcoming, he said.

Purchases by utilities during the next six to nine months will improve, possibly to the 1936 level, but the expansion will not be large. Potential need for replacement and expansion are large, however.

Automobiles and the light industries may be expected to gain, perhaps as much as 30 per cent. For heavy industries, the outlook has improved in the last month as result of the political turn.

American plants in many cases are obsolete, said Mr. Cumberland, and the lift of the next six months may prove to be the base for a much greater business expansion beyond that period.

Growth and mounting burden of taxation was traced by Fred R. Fairchild, professor of political economy, Yale university. Federal, state and local taxes took 16½ per cent of the total national income in 1936.

Blames Increased Spending

Professor Fairchild said failure to balance the national budget was due not to decreased revenue, but to increased spending. The unbalanced budget, he said, has a retarding influence on industry, curtails investment and slackens enterprise.

Added efficiency through good housekeeping, waste elimination and accident prevention pays dividends in reducing costs, said A. D. Lynch, industrial relations manager, J. I. Case Co., Racine, Wis.

Narrowing differentials for skill lessens economic progress and aids operations of the professional labor organizer and politician, declared Whiting Williams, Cleveland. Mr. Williams reviewed labor conditions in Europe, which he recently surveyed.

George A. Seyler, works manager, The Lunkenheimer Co., Cincinnati, gave an address on "This Thing Called Grievance."

Comments on the wage and hour law and the Wagner act were made by Otto A. Jaburek, general counsel for the association. Mr. Jaburek suggested that when employers are asked to bargain with a labor group on the matter of a contract, they should insist the group actually represents a majority of employes.

The following members were elected to district committees:

First district — Henry S. Washburn, Plainville Casting Co., Plainville, Conn.; Ernest F. Stockwell, Barbour Stockwell Co., Cambridge, Mass.; G. R. Holmes, McLagon Foundry Co., New Haven, Conn.; H. B. Johnson Jr., General Fire Extinguisher Co., Providence, R. I.; R. F. Harrington, Hunt-Spiller Mfg. Co., Boston.

Second district—Noah F. Young, Lumen Bearing Co., Buffalo; R. H. Goodwillie, Otis Elevator Co., Yonkers, N. Y.; Irving L. Jones, International Heater Co., Utica, N. Y.; P. R. Van Duyne, Meeker Foundry Co., Newark, N. J.; Theodore H. Miller, DeLaval Separator Co., Poughkeepsie, N. Y.

Third district—D. C. Bakewell, Blaw-Knox Co., Pittsburgh; C. H. Hoffstetter, Odin Stove Mfg. Co., Erie, Pa.; James H. Anderson, Cooper-Bessemer Corp., Grove City, Pa.; G. L. Coppage, Pusey & Jones Corp., Wilmington, Del.; George R. Casey, Treadwell Engineering Co., Easton, Pa.

Fourth district—J. S. Tatman, Roots-Connersville Blower Corp., Connersville, Ind.; C. F. Seelbach, Forest City Foundries Co., Cleveland; Chester A. Feebles, Stedman's Foundry & Machine Works, Aurora, Ind.; A. H. Thomas, Buckeye Steel Castings Co., Columbus, O.; Carl F. Clarke, Monroe Steel Castings Co., Monroe, Mich.

Fifth district—H. G. Myers, Gardner-Denver Co., Quincy, Ill.; H. E. Muchnic, Locomotive Finished Material Co., Atchison, Kans.; A. H. Head, John Deere Tractor Co., Waterloo, Iowa; C. B. Magrath, Greenlee Foundry Co., Chicago; E. L. Berry, Link-Belt Co., Chicago.

Sixth district—Frederic Crosby, American Hoist & Derrick Co., St. Paul; F. H. Clausen, Van Brunt Mfg. Co., Horicon, Wis.; W. S. Wood, Beloit Iron Works, Beloit, Wis.; C. F. Wehr, Wehr Steel Co., Milwaukee; William J. Grede, Spring City Foundry Co., Waukesha, Wis.

Seventh district—H. E. McWane, Lynchburg Foundry Co., Lynchburg, Va.; A. I. Brainard, Beaumont Iron Works Co., Beaumont, Tex.; G. E. Jones, United States Pipe & Foundry Co., Bessemer, Ala.; W. F. Tynes, Hardie-Tynes Mfg. Co., Birmingham, Ala.; Foskett Brown, Gray & Dudley Co., Nashville, Tenn.

The following past presidents of the association were elected honorary members of the council: Thomas S. Hammond, Whiting Corp., Harvey, Ill.; S. Wells Utley, Detroit Steel Casting Co., Detroit; Thomas W. Pangborn, Pangborn Corp., Hagerstown, Md.

Avoid Reaction, Prentis Cautions

■ A WARNING to business and industry not to become reactionary, complacent and overconfident now that it is regaining the public's ear was sounded by N. W. Prentis Jr., president, Armstrong Cork Co., Lancaster, Pa., last week before the Society of Automotive Engineers meeting in New York.

"The public mind is more receptive to the voice of business today than it has been at any time since 1930," Mr. Prentis said. "The siren song of the economic and political theorist is far less alluring now that 20 billions of additional debt have been hung like a millstone around the country's neck, while ten million unemployed men still walk our streets."

The speaker, chairman of the National Association of Manufacturers' committee on industrial practices, urged businessmen to adopt and maintain practices which would help bring social and political evolution into line with industrial evolution.

"The situation our country faces makes the call to American industry to set its own house in order particularly loud and clear," he continued. "Business must come into the court of public opinion with clean hands if it is to render its full patriotic duty to the nation in this crucial period.

"Sincere or insincere, logical or foolish, the traducers of American industry must not be permitted to destroy the faith of the American people in our system of free enterprise. . . .

"Destroy any one of the three legs of this tripod and the whole structure of freedom will crash. The history of the past ages, the events of the last two decades, and recent happenings in Europe, all bear incontrovertible testimony to the truth of that assertion."

Mr. Prentis declared that only by affirmation of fundamental principles of business responsibilities can businessmen "provide the intelligent, far-seeing stewardship that will sterilize economic and political radicalism."

E. T. Weir's First Plant Given to Clarksburg

■ Weirton Steel Co., Weirton, W. Va., has presented its Clarksburg, W. Va., plant to the Clarksburg chamber of commerce, without restrictions. The chamber will seek a tenant to provide an industry affording employment.

The plant has been idle since 1906. Built originally in 1901-02 it has been remodeled and enlarged a number of times. It was here that E. T. Weir, then an employe of a canning company but now chairman of Weirton Steel, and chairman, National Steel Corp., started a tin plate works, which developed into the Weirton Steel Co.

Steel Trade Gains Advantages from New Anglo-American Trade Pacts

■ SIGNING of a new trade agreement between Great Britain, Canada and the United States Thursday, effective Jan. 1 for three years, marks the culmination of an effort to bind English speaking nations by mutually beneficial tariff provisions. The pacts run indefinitely after three years, with provision for six months notice of termination and provision is made for abrogating the treaties if currency fluctuations tend to defeat their purpose.

Under the agreement with Canada the latter has reduced its duty on blooms, billets and sheet bars from the United States from $4.50 to $4 per ton. The duty on ferroalloys remains at 5 per cent.

Bars, Hoops, Bands

Bars and rods not further processed than hot-rolled remain at $7 per ton, but if cold-rolled the duty is reduced from 25 to 20 per cent. Iron and steel plates remain at $8 per ton and sheets at 20 per cent.

On hoops and bands the rate has been cut from 15 to 12½ per cent, and on stainless steel sheets from 20 to 17½ per cent. Skelp remains at 5 per cent.

Malleable, non-malleable and steel castings will carry a duty of 22½ per cent instead of the former 25 per cent. Hollow forgings of iron or steel are reduced from 27½ per cent to 20 per cent.

The United States leaves the duty on spiegeleisen from Canada at 75 cents per ton, ferromanganese at 1 cent per pound, and ferrochrome at 1¼ cents per pound, but ferrosilicon is reduced from 1½ cents to 1 cent per pound. Hollow bars have been changed from 3¼ cents per pound to 20 per cent, with a minimum of 1⅝ cents per pound. Cast iron pipe fittings remain at 15 per cent.

No changes were made by England or the United States in import duties on iron and steel items.

Great Britain granted tariff reductions on about 450 American products of many descriptions, and the United States on about 150 British products. Canada conceded on about 1490 American products and was given lower rates on about 400 products.

Railroads in the United States probably will profit largely from provision for free trade in wheat, the duty previously diverting export of Canadian wheat from Atlantic ports in the United States. The new provisions are expected to restore much of this traffic.

No change is made in the duty of 33 1/3 per cent on automobile imports into Great Britain from the United States. British duties on typewriters and other business machines are reduced about one-fourth from previous rates. Electrical machinery and equipment have been cut from about 20 per cent to about 15 per cent. Similar concessions have been made on refrigerators, washing machines, vacuum cleaners, heating and cooking equipment, air conditioning devices and storage batteries other than for automobiles.

Similar reductions have been made on gasoline and oil pumps, laundry and dry cleaning equipment and similar machinery.

Under most favored nations agreements the new duties by Canada and Great Britain automatically apply to all other countries not included in the British Empire. They do not apply to other units of the empire because these already enjoy preferential treatment among themselves. The new rates on Canadian and British goods apply automatically to all nations except Germany, under the policy of the United States not to give most favored nations privileges to countries discriminating against American goods.

STEEL EXPORTERS VIEW NEW SCHEDULES AS BENEFIT

NEW YORK

■ Pending opportunity for more complete analysis, steel importers here believe they came out fairly well on the new trade pacts.

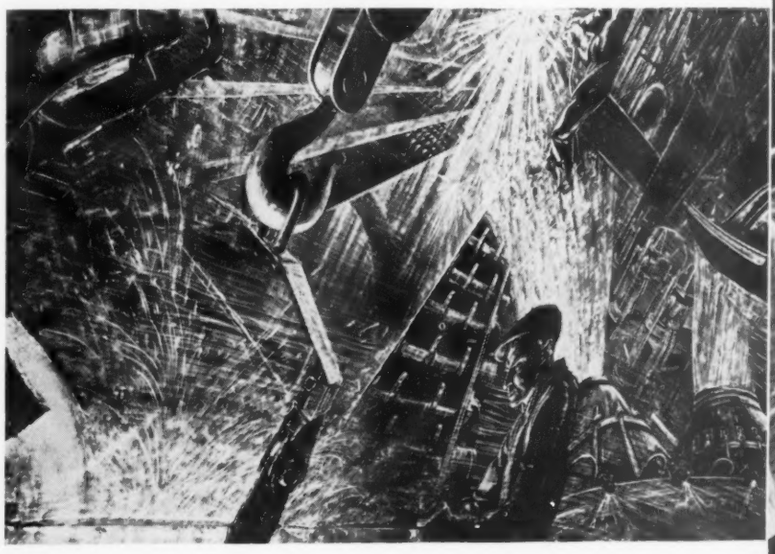
Canada's agreement to waive the 3 per cent excise duty on a number of items was considered definitely favorable. Furthermore, there is Canada's reduction in import duty on blooms, billets, sheet bars and certain other forms of semifinished steel of 50 cents per ton and on hot-rolled bars of $1 to $6 per ton. Downward adjustment of duties on hoops, bands and stainless steel are also important.

The United States has made a concession on ferrosilicon but ferromanganese, and most other leading ferroalloys are unchanged.

A cursory glance indicates that

"The World of Steel"

■ **Murals by Clara Fargo Thomas for United States Steel Corp., in gallery of Maison Francaise, Rockefeller Center, New York. These and others will be hung in the corporation's pavilion at New York World's fair. They are painted on Macassar ebony**



concessions deal principally with manufactured products. However, the duty on English low phosphorus pig iron, not more than 0.04 in phosphorus, has been reduced 50 cents per ton by the United States, among the few changes noted in plain iron and steel.

ENAMELING

STUDY PORCELAIN ENAMELED STEEL FOR STRUCTURAL WORK

■ CONSIDERABLE interest was manifest at the eighth annual meeting of the Porcelain Enamel institute, Cleveland, Nov. 16-17, in wider use of porcelain enameled steel for structural work as demonstrated in the 300 houses being built at Colonial Village near Clairton, Pa. Details were presented by Royce Gilbert of Gilbert-Varker Inc., architects who designed this project. (See p. 38.)

A special session was held to consider formation of a structural division. Recent structures with porcelain enameled exteriors include a Cleveland store building at Fourteenth and Euclid, many buildings at the New York World's fair, and a high school at Girardville, Pa. The latter has 20,000 square feet of porcelain enamel exterior, and it may mark the introduction of a new type of construction. The structural steel and foundations were appreciably reduced due to light weight of exterior surface.

Suggests New Markets

G. S. Blome, Baltimore Enamel & Novelty Co., Baltimore, presented a plan to investigate markets represented by gasoline pumps, toilet partitions, backings and splashers for kitchen use, drawer fronts. Other important markets, emphasized by R. A. Weaver, Ferro Enamel Corp., Cleveland, are electrical transformer cases and range boilers for household use.

R. M. King, Ohio State university, Columbus, reported on progress of the architectural porcelain enamel handbook now in preparation. The book discusses improved erecting methods and includes specifications for enameling stock, enamels and thickness. Specifications for refrigerators limit enamel thickness to 0.025-inch. Architectural limits will be 0.030-inch, with recommended maximum panel size of 9 square feet. Joint specifications call for ⅛-inch between panels. Other specifications cover rustproofing of all metal fastenings, design of metal parts, method of cutting panels to fit, firing, welding, and calking compounds.

Activities for 1939 will include completion of the sag test specifications now under way, and publication of the handbook on design of sheet metal parts to be porcelain enameled, both important in connection with increased use in the structural field. The Bureau of Standards Fellowship is to continue study of chipping, considered most important at present.

Officers were re-elected. President is F. E. Hodek Jr., General Porcelain Enameling & Mfg. Co., Chicago; vice presidents, H. D. Chase, Chicago Vitreous Enamel Products Co., Cicero, Ill., and R. H. Turk, Porcelain Enamel & Mfg. Co., Baltimore; treasurer, William Hogenson, Chicago Vitreous Enamel Products Co.

Air Conditioning

OUTLINES NEW PROMOTION FOR AIR CONDITIONING

■ CONVINCED that the air conditioning industry is on the threshhold of an era of unprecedented promotion, popularity and profit, Westinghouse Electric & Mfg. Co. is inaugurating a new program for promoting its equipment for this field. The program was announced Nov. 18 at a meeting at its Springfield, Mass., headquarters for the air conditioning division.

In making the announcement, P. Y. Danley, manager of the division, stated disappointment had been felt over the rate of growth of the air conditioning field, but that the retarding factors have been beyond control of the industry.

Optimism for the future, Mr. Danley stated, is based on three factors: (1) Continued consumer acceptance and popularity; (2) better and wider distribution; and (3) introduction of the "packaged unit" for contractors. All indications point to expansion of the market to be directed toward apparel shops, markets, offices, hospitals, theaters, restaurants, schools, depots, barber shops, department stores, etc.

Continuing, he said the mass market is now opened to the company through the medium of packaged air conditioning for contractors. By packaged air conditioning is meant a unit for the contractor which has all refrigeration connections, internal wiring, piping of refrigerant and the like, factory built and tested. "Not only are we at Westinghouse predicting the invasion of this mass market," he stated, "but we have changed our distribution to take care of this anticipated increase in sales and promotion."

Although the company is doing everything to make it easy for small contractors to apply air conditioning to homes and shops, the large heating and ventilating engineering organization remains the backbone for big custom-built jobs. When a small contractor uncovers a complicated application, the company expects to provide a direct tie-in with its regular engineering contractors.

To give the smaller-town heating and ventilating representatives a year-round, all-market, one-brand line to sell, Westinghouse will offer "Home Heating and Air Conditioning," Mr. Danley announced. The line has been sufficiently expanded to cover the field, there now being two lines of gravity coal-fired furnaces; gravity gas-fired furnaces; conversion oil burner; blower-filter units; boiler-burner units for oil and gas; winter air conditioning units for oil, gas, hand or stoker-fired coal. For summer cooling, there are packaged units which may be installed in the supply duct of winter-air conditioning systems to add summer cooling and dehumidifying and convert the system for a year-round service.

GALVANIZING

GALVANIZERS COMMITTEE RE-ELECTS ITS OFFICERS

■ GALVANIZERS COMMITTEE, sponsored by the American Zinc institute, conducted its fifth meeting at the Palmer House, Chicago, Nov. 17-19, with an attendance of 75 representing 20 steel companies in the United States and Canada. The three sessions, which were open only to members and invited guests, were devoted to discussion of production and quality of galvanized coatings on mill products. The second day was given to visits to the Gary, Ind., works of Carnegie-Illinois Steel Corp., and Indiana Harbor, Ind., works, Inland Steel Co.

All members of the governing board were re-elected at the business session. Personnel of the board is: Chairman, F. G. White, chief, department of metallurgy and inspection, Granite City Steel Co., Granite City, Ill.; N. E. Cook, general superintendent of galvanizing, Wheeling Steel Corp., Wheeling, W. Va.; R. H. Dibble, metallurgical engineer, Carnegie-Illinois Steel Corp., Pittsburgh; B. P. Finkbone, superintendent of galvanizing, American Rolling Mill Co., Ashland, Ky.; D. A. Russell, chief chemist, Campbell works, Youngstown Sheet & Tube Co., Youngstown, O.; and J. L. Schueler, general superintendent, Continental Steel Corp., Kokomo, Ind.; G. A. Brayton, superintendent, galvanizing department, Newport Rolling Mill Co., Newport, Ky.

E. V. Gent, 60 East Forty-second street, New York, continues as secretary-treasurer.

LABOR

SECOND GENERATION BOBS UP IN WEIRTON SUIT

■ HEARINGS on SWOC's complaint against Weirton Steel Co. were resumed in Pittsburgh last week before a national labor relations board examiner.

The complaint was filed in May, 1937; the summons served Aug. 1; the hearings started Aug. 16. Locale has shifted from New Cumberland, W. Va., to Steubenville, O., to Washington, to Pittsburgh. Hundreds of witnesses have testified, thousands of pages of testimony taken; thousands of exhibits submitted.

Last week, John E. Laughlin, Weirton's chief counsel, appeared in the "court", smiling. To friends he imparted the news a "blessed event" had just occurred at his home.

"And," he grinned, "I've been a bachelor, a benedict, now a father, all since this hearing began . . . I hope it's over before I'm a grandfather."

APOLLO STEEL PROTESTS WAGE RECOMMENDATION

Apollo Steel Co., Apollo, Pa., has filed statement with public contracts board protesting against adoption of steel wage recommendations. The company states:

"We cannot under present conditions pay more than 53 cents per hour for common labor, which is our present rate.

"In fact, we feel now that it would be disastrous for us to bid on any further government work if such a ruling were put into effect, as has been suggested. We have been fighting for our existence for the past ten years. This action will simply be another blow to our hopes of continuing in business.

"The present administration has expressed itself frequently as wishing to aid the smaller manufacturers. However, all of the actions which they have taken and brought about in the steel industry have worked to the detriment of the small manufacturer and greatly to the advantage of the larger interests."

INLAND STEEL TO APPEAL SECOND LABOR BOARD ORDER

Inland Steel Co., Chicago, last week told the national labor relations board it had taken no steps to comply with the board's Nov. 12 order and that the company would appeal the ruling promptly to federal courts.

The ruling ordered Inland to bargain collectively with SWOC and to sign a contract with the union if agreement is reached in negotiations. It was the board's second decision in the Inland case. A prior one, handed down in April, was withdrawn when a Supreme Court decision indicated possible procedural deficiencies.

The new order was identical with the first except that the board acceeded to Inland's request that it not order a contract for a definite term. The new order presumably permits an indefinite contract.

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

	Week ended Nov. 19	Change	Same week 1937	Same week 1936
Pittsburgh	52	+ 4	36	67
Chicago	60	+ 2	27.5	76.5
Eastern Pa.	36	+ 1	35	48
Youngstown	60	− 6	42	73
Wheeling	66	+ 2	43	89
Cleveland	79.5	+ 2.5	15	79.5
Buffalo	49	None	28	84
Birmingham	68	None	54	74
New England	80	+ 8	30	73
Cincinnati	75	None	25	96
St. Louis	51.5	None	15	68
Detroit	82	None	71	100
Average	63	+ 1.5	35	74.5

Foundry Equipment Orders Gain in October

■ Foundry equipment orders increased in October, the net order index 87.9 comparing with 78.7 in September and 185.2 in October, 1937, according to the Foundry Equipment Manufacturers' association. Shipments also advanced, the index for October standing at 93.4, against 84.2 in September, and 232.3 in October, 1937.

Unfilled orders index for October was 91.8; 97.3 in September, and 309.3 in October, 1937. Three months' average of gross orders was 83.3; 79.1 in September, and 224.6 in October last year. Indexes are based on 1922-24 as 100 per cent.

Bethlehem Shipbuilding Merged in Steel Company

■ E. G. Grace, president, Bethlehem Steel Corp. last week announced that Bethlehem Shipbuilding Corp. Ltd., has been merged into Bethlehem Steel Co., as a further step in the program of consolidating various subsidiaries begun in 1936.

All business heretofore conducted by the shipbuilding corporation will be conducted by a new division of the steel company created to take over the shipbuilding and repair activities. These will continue under the supervision of S. W. Wakeman, vice president, with headquarters at 25 Broadway, New York, and Quincy, Mass.

PRODUCTION

■ STEELWORKS operations last week advanced in six producing centers, remained stationary in five and declined in one. The national rate advanced 1.5 points to 63 per cent.

Youngstown, O.—Down 6 points to 60 per cent. Indications are for a decline of 3 points to about 57 per cent this week. Republic Steel Corp. has suspended two open hearths at its Warren, O., plant. Carnegie-Illinois Steel Corp. probably will take off three or four furnaces.

Pittsburgh—Substantial additions to active capacity by large producers raised the rate 4 points to 52 per cent, with further gains expected this week.

Wheeling—Up 2 points to 66 per cent. Weirton Steel Co. is operating 100 per cent for the first time since August, 1937.

Birmingham, Ala.—Held at 68 per cent. The rate this week will be 75 per cent, Tennessee Coal, Iron & Railroad Co. lighting another open hearth at Ensley works.

Buffalo—With 21 open hearths active the rate was steady at 49 per cent.

St. Louis—Unchanged at 51.5 per cent, 17 open hearths being in service, the largest number this year.

Cincinnati—Steady at 75 per cent for the third consecutive week.

Detroit—For the fourth consecutive week operations held at 82 per cent, 20 of 25 open hearths active. One is melting scrap for hot metal supply.

Chicago—Increased 2 points to 60 per cent, two interests adding to active capacity, others maintaining their rate.

New England—Rose 8 points to 80 per cent, highest in 18 months. One interest is operating at 100 per cent, and two others at 75 per cent.

Cleveland — Addition of an open hearth by Republic Steel Corp. raised the rate 2.5 points to 79.5 per cent. The same is scheduled for this week.

Gulf Shipbuilding Corp. Acquires Alabama Yard

■ Gulf Shipbuilding Corp., Mobile, Ala., recently formed with $1,000,000 capital, has purchased the Chickasaw Shipbuilding Co. from Tennessee Coal, Iron & Railroad Co. The yards include eight shipways on a 90-acre site in Chickasaw, Ala.

According to T. W. Stevens, vice president, the Gulf company expects shortly a contract under the federal maritime commission's merchant ship construction program. Work of rehabilitating the plant, idle since the World war, is to begin immediately.

MEN OF INDUSTRY

■ DONALD B. GILLIES, vice president, Republic Steel Corp., Cleveland, has been elected president, American Institute of Mining and Metallurgical Engineers, New York. The following new directors have been chosen for 1939: Charles Camsell, deputy minister, department of mines and resources, Dominion of Canada, Ottawa; Chester A. Fulton, president, Southern Phosphate Corp., Baltimore; James T. MacKenzie, chairman, iron and steel division, American Institute of Mining and Metallurgical Engineers, and metallurgist and chief chemist, American Cast Iron Pipe Co., Birmingham, Ala., and Francis A. Thomson, chairman, mineral industry education division, A.I.M.E., and president of Montana School of Mines, Butte, Mont.

♦

Bertram Bredy has been appointed general manager of the new plant at Franklin Park, Ill., of Thompson Wire Co., Boston.

♦

Donald C. Lott, C. E. Lott and William H. Cosgrove have resigned as officers and directors, Steel & Engineering Inc., Pittsburgh.

♦

A. L. Foell, chief engineer, and H. R. Moorhouse, assistant secretary, Arthur G. McKee & Co., Cleveland, sailed for England Nov. 12 to advise regarding improvement of the properties and business of a steel company in the north of England.

♦

William G. Hurlbert has been elected chairman of the board, Bostwick Steel Lath Co., Niles, O. He has been succeeded as president by his eldest son, William G. Hurlbert Jr., who has been associated with the company since 1912 serving in capacities of secretary and treasurer, and treasurer and general manager.

♦

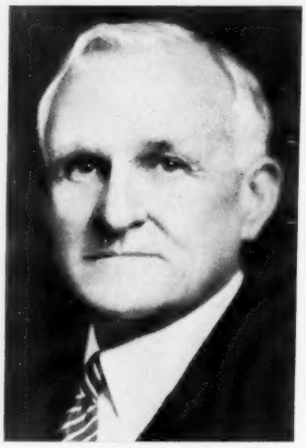
Reed M. Andress, vice president and foreign manager, Barnes Drill Co., Rockford, Ill., is visiting company agents in Great Britain, France, Italy, Switzerland, Sweden, Belgium and Holland.

♦

J. Truman Steinko has been appointed advertising and sales promotion manager, Leonard division, Nash-Kelvinator Corp., Detroit. He has been a member of the corporation's advertising and sales promotion staff the past several years.

♦

J. R. Townsend, materials standards engineer, Bell Telephone Laboratories Inc., New York, has been elected a member, executive committee, American Society for Testing Materials. He succeeds Allen Rogers, who recently resigned because of ill health.



Donald B. Gillies

♦

George F. Paul, formerly assistant superintendent of Youngstown Sheet & Tube Co.'s hot strip mill, Youngstown, O., has sailed for England to become general superintendent of the hot and cold strip mills John Summers & Sons Ltd. have been building at Chester, England.

♦

E. R. Galvin, general sales manager, Caterpillar Tractor Co., Peoria, Ill., has been appointed to a similar position with R. G. LeTourneau Inc., Peoria. He succeeds D. M. Burgess, who has been promoted to general manager of the LeTourneau organization.

♦

Robert S. Thurston, the past five years head of the sales engineering section, air conditioning department, General Electric Co., Schenectady, N. Y., has resigned to become general manager, General Air Conditioning Co., General Electric distributor in Memphis, Tenn.

♦

Frank A. Frey has been elected president and treasurer, Geuder, Paeschke & Frey Co., Milwaukee, to succeed the late Charles Paeschke Jr. Mr. Frey, son of the late F. J. Frey, one of the founders of the firm, became associated with the company in 1913 following graduation from the University of Wisconsin. Henry F. Millman, vice president in charge of production, has been elected executive vice president and general manager, while August Kurz Paeschke, remains secretary.

♦

E. T. Lorig has been named chief engineer, Irvin works, Clairton, Pa., Carnegie-Illinois Steel Corp. R. J. MacKenzie has been made assistant chief engineer; A. L. Billeter, division superintendent, flat products finishing; A. C. Bledsoe, superintendent of cold reduction; Glenn R. Braddock, chief order clerk; John S. Alter, assistant chief metallurgist; F. L. Schwearingen, construction

Appointed Machine Tool Editor

■ GUY HUBBARD, who since 1936 has been associate editor of *Machine Design*, has been appointed machine tool editor of STEEL.

Following an engineering course at New Hampshire State college, Mr. Hubbard began his career as an apprentice with the Windsor Machine Co., Windsor, Vt., in 1915. He was associated with this company and its successor, the National Acme Co., for 15 years, in the engineering department and later as advertising manager at Cleveland.

Mr. Hubbard's experience also has included editorial work for the American Society of Mechanical Engineers, operation of the code of the machine tool and forging machinery industries, consulting work with the Cone Automatic Machine Co. Inc., and a considerable amount of research and writing on the history and modern trends of the machine tool industry. During the war he served for a year in the ordnance department of the army.

Mr. Hubbard joined the Penton Publishing Co. in 1930 as an associate editor of STEEL, specializing on

Guy Hubbard

editorial work relating to the design, construction and application of metalworking machinery.

engineer; A. J. Berdis, appropriation control engineer; Klaus Egge, chief design engineer; Samuel B. Webster, project engineer; J. W. Bates, electrical engineer, and W. H. Dailey, power and fuel engineer.

♦

Walter C. Rueckel has joined the staff of Battelle Memorial institute, Columbus, O., as research engineer. Mr. Rueckel, who has been with the Koppers Co. the past three years, will be engaged in ceramic research.

♦

Donald A. Robison, heretofore treasurer, Caterpillar Tractor Co., Peoria, Ill., has been appointed general sales manager. W. J. McBrian,

D. A. Robison

domestic credit manager, has been promoted to head of the treasury department.

♦

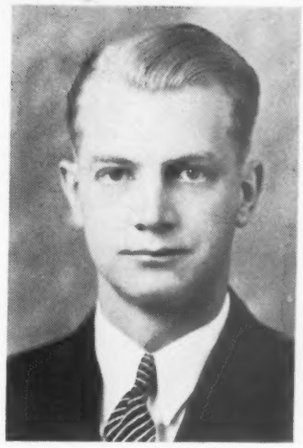
John E. Urquhart has been appointed general superintendent of all operations, Woodward Iron Co., Woodward, Ala. Heretofore he has been general superintendent of all operations except coal and ore mining, which now have been placed under his supervision.

♦

Clarence M. Woolley has retired as chairman and president, American Radiator & Standard Sanitary Corp. to which offices he was elected upon the merger of the two companies in 1929. He has been succeeded by Henry M. Reed, president of Standard Sanitary Mfg. Co. Mr. Wooley also retires as chairman of American Radiator Co., a post to which Mr. Reed also succeeds.

♦

George H. Spencer has joined Bantam Bearings Corp., South Bend, Ind., a subsidiary of Torrington Co., Torrington, Conn., to take charge of the New England district and also to serve as paper machinery specialist for the products of both organizations. Since graduating from Stevens Institute of Technology, Mr. Spencer's experience has included work as paper mill



W. C. Rueckel

engineer for SKF Industries Inc., followed by sales work with Minton Vacuum Dryer Corp., Greenwich, Conn., and with E. D. Jones & Sons Co., Pittsfield, Mass., the past three years as general manager of the latter firm.

♦

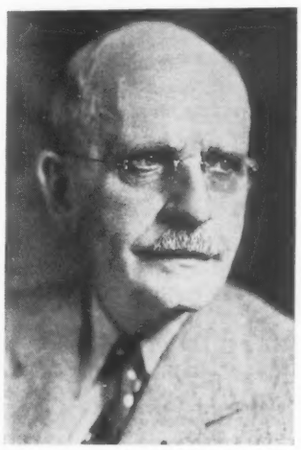
Lewis B. Swift, heretofore vice president in charge of engineering and research, Taylor Instrument Companies, Rochester, N. Y., has been elected president. He succeeds Herbert J. Winn, who becomes chairman of the board. Karl H. Hubbard has been appointed chief engineer, in charge of engineering research and design, and Dr. H. L. Mason will succeed him as head of the research division.

Other officers are: Vice presidents, P. Richard Jameson, Henry W. Kimmel, and Fred K. Taylor; treasurer, Herbert J. Noble; secretary, Henry W. Kimmel; assistant secretary, George H. Taylor.

♦

H. S. Norton, Gary, Ind., civic leader, will retire from active service as vice president of Gary Land Co. Nov. 27 under the United States Steel Corp. pension plan. He has served 39 years with subsidiary companies of the corporation. Mr. Norton went to Gary in 1907, less than a year after the corporation began construction of mills there. Previously he had served with corporation subsidiaries for eight years, beginning in 1899 with the Illinois Steel Co. at Joliet, Ill. At Gary he served as property agent of the land company from 1907 to 1936 when he was named vice president.

Mr. Norton, a graduate of DePauw university, Greencastle, Ind., 1888, started his business career at Lockport, Ill., with his father's firm, Singer & Norton Stone Co.



H. S. Norton

DIED:

■ WALTER S. MOODY, 74, retired engineer and former head of the transformer division, General Electric Co., Schenectady, N. Y., Nov. 7. After serving as an instructor at Massachusetts Institute of Technology he became assistant engineer, Thompson-Welding Co., resigning in 1893 to become designing engineer, Thomson-Houston Electric Co., which later consolidated with General Electric. In addition to his researches in the metallurgy of copper and magnetic steel he is credited as being the first, in association with Sir Robert Hadfield, to produce silicon steel in large quantities in thin sheets.

♦

William D. Lewis, 78, director and purchasing agent, Cleveland Hardware Co., Cleveland, in Lake Worth, Fla., recently. He had been with the company 49 years.

♦

George C. Cooke, 65, president, American Railway Products Co. Inc., Chicago, maker of safety cotter pins, couplers, locks and other safety devices, in Norwalk, Conn., Nov. 8.

♦

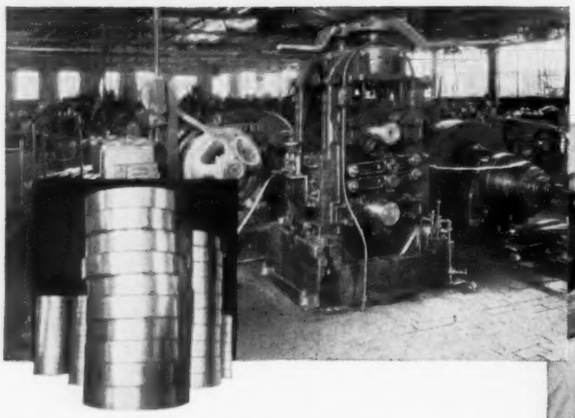
Hurlbut S. Jacoby, 52, director of industrial research, Ohio State university, Columbus, O., and former vice president and chief engineer, H. K. Ferguson Co., Cleveland, engineers and builders, in Columbus, Nov. 16.

♦

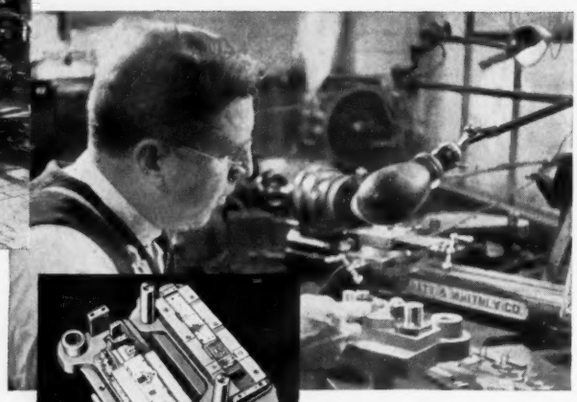
Herbert H. Rice, 68, former executive of General Motors Corp., while hunting at Onaway, Mich., Nov. 15. He began his career with Pope Mfg. Co., Boston, bicycle builder, and in 1898 became active in the automobile industry. In 1916 he was named treasurer of General Motors and two years later a vice president, becoming president and general manager of Cadillac Motor Car Co. in 1921. He held this post until 1925 when he became assistant to the president of General Motors, leaving that corporation in 1931 to become president, Sweet Oil Refining Co.

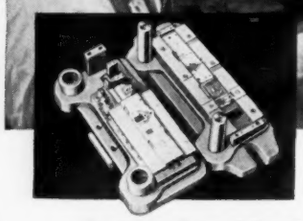
when it comes to Spring Steel and Steel Springs

avail yourself of the facilities of the Complete Springmaker



SPRING STEEL made by the Wallace Barnes Company specifically for use in springs; having ductility, hardening properties, and high fatigue properties which are the result of years of research.





TOOLS designed and built for the fabrication of spring steel into accurate parts with the minimum of tool maintenance and low unit cost.

HEAT TREATMENT based on years of research, with ultra-modern equipment, and experience in the handling of spring steel and knowledge of spring requirements.

THESE FACILITIES, either separate or in combination, plus expert engineering advice, are available to users of spring steel or heat treated spring steel parts of any description.

Wallace Barnes Company, Bristol, Conn.

DIVISION OF ASSOCIATED SPRING CORPORATION

Ask for your free copy of the Handbook of Spring Information giving engineering and practical information on springs and spring materials

WINDOWS OF WASHINGTON

WASHINGTON

■ SECRETARY OF THE NAVY SWANSON, in his annual report discussing research in his department referred to "an investigation of flame-cutting of high tensile and nickel steels and flame gouging of medium steel castings to determine the most expeditious method of fabrication and removal of defects."

He also commented on extensive use which is being made of the gamma-ray and x-ray examinations for nondestructive testing of important castings, forgings and weldings. He called attention to "a comprehensive report on steel casting design as affecting the integrity of steel castings, which has been prepared. It is anticipated that this work will be of particular value to the navy and of general value to the steel casting industry of the country."

Reference also is made to "an actual average age of machine tools in industrial yards of 19 years against a desired average age of 15 years," and "a deficiency of certain tools in many yards, causing choke points and shift work.

"Expenditures during the year for additions to plant equipment and replacement of old equipment have been made by joint bureau of construction and repair and bureau of engineering action."

It is pointed out that funds made available and spent during 1938 were not sufficient to offset the year's depreciation so that no improvement was reported "of the unsatisfactory conditions noted in the last annual report." This reference is to the age of the machine tools now in use by the navy.

Relative to the shipbuilding program, the report says "to aid in accelerating the pace of current shipbuilding program in the navy yards and in anticipation of the larger building program about to be started, a broad and comprehensive plan of plant improvement including buildings, facilities and equipment was initiated in mid-year. Funds for many urgent items of this plan were requested of and voted by congress in the second deficiency bill of 1938. This work will be pressed to completion as fast as funds become available.

"Steps were taken to accelerate the procurement of modern laboratory equipment to augment existing facilities and to replace obsolete and worn out equipment with the end in view of increasing the quantity and improving the quality of this phase of the bureau's work."

It is stated contacts have been established with representatives of the National Machine Tool Builders' association "and that association in cooperation with the office of Assistant Secretary of War Johnson has undertaken a survey of the productive capacity of the machine tool industry."

BY L. M. LAMM
Washington Editor, STEEL

SENATOR PREDICTS TREND TO ECONOMY IN CONGRESS

That congress will not pass any general tax bill at its coming session is predicted by Senator Connally, Texas, a member of the senate finance committee which handles tax bills.

Improving business conditions should increase federal revenues and make tax revisions unnecessary, he said. He indicated, however, the reenactment of so-called "nuisance" taxes, many of which expire next year. These taxes include such levies as that on theater tickets.

The senator said he believed that, in the long run, congress will be forced to increase tax rates on incomes in the middle brackets and to consider lowering exemptions.

"There is no doubt that the government is going to need more revenue, and I think the place to get it is in the middle brackets, in incomes from $15,000 to $25,000," he declared. "The rates are as high on the big incomes as they can be made without reducing the amount of the receipts.

"The people who are making from $15,000 to $25,000 a year can afford to pay a little more in taxes without being hurt."

The senator thought that any proposal to revive the tax on undistributed corporation profits would meet strong opposition.

President Roosevelt served notice, when he permitted the 1938 tax bill to become law without his signature, he would ask the next congress to restore the 1937 tax in some form. It was largely vitiated by amendments in the general tax law enacted by the last congress.

Senator Connally predicted that enlarged naval and war department budgets to increase defense armaments would win quick approval in congress.

An economy trend in congress, however, is likely to make itself felt on other governmental expenditures, he said.

ARMY EQUIPMENT NEEDS FURTHER MODERNIZATION

Further progress was made last year in providing the army with modern equipment, according to the annual report of Gen. Malin Craig, chief-of-staff. However, in certain essential and critical equipment items there are marked shortages. General Craig cites antiaircraft and antitank weapons, mechanization, field artillery materiel, airplanes, motorization, seacoast defense and miscellaneous equipment as deficient.

The report states that with the funds available for the fiscal year

1939, "the motorization program will become approximately 67 per cent complete for the regular army and 50 per cent for the national guard." It is stated further that the extreme shortage of antiaircraft material was relieved in part by the appropriation act of 1939. Further appropriations, however, will be required.

Antitank Guns Imperative

General Craig says there is an imperative need for antitank armament. "Our army at present," he states, "is wholly lacking in an effective weapon of this type. One has been developed by the ordnance department and will be supplied to the limited extent permitted by the appropriation for the fiscal year 1939."

A light tank program of the regular army has been completed, the report states, and a modern medium tank "has been developed and a program for meeting requirements in this weapon will be initiated in the fiscal year 1939."

Discussing munitions, the chief-of-staff said: "Following the adoption of the protective mobilization plan, an exhaustive study was made of the war reserves for the accomplishment of that plan.

"Articles of a purely military character cannot be obtained promptly from commercial sources upon the outbreak of war. They must be procured in time of peace and held in war reserve. The quantities of each of these items that should be provided in war reserve are those that will be needed to meet the requirements of the plan during the period that will elapse before industry can obtain a rate of production adequate to meet the then current military needs.

"The total cost of the war reserves required for the protective mobilization plan is considerably less than that of the plan that is superseded. Nevertheless, our present war reserves are far short of requirements in a number of critical items. The situation will be improved to some extent through the funds that will be available during the ensuing fiscal year, but large shortages will still remain. The removal of these shortages is a matter of major military importance."

OVERTIME FOR ALL HOURS ABOVE 44 IN ONE WEEK

A tool company in Dayton, O., whose name was not made public, asked for an opinion from the hours and wages division of the department of labor. The general counsel's office replied as follows:

"1. The law requires you to pay overtime for hours worked in excess of 44 per week.

"2. The law requires overtime to be paid for all hours in excess of 44 per week. The fact that an employe was absent or ill during the previous week does not affect this statutory requirement.

"3. Section 3 (g) of the act defines 'employ' to include 'to suffer or permit to work.' Sections 6 and 7 are, therefore, applicable where the employe is permitted to work."

FEDERAL IRON, STEEL ORDERS

During the week ending Nov. 12, the government awarded contracts for iron, steel and their products totaling $4,590,278.69. These contracts were awarded under the Walsh-Healey law, the items totaling as follows: Bethlehem Steel Co., Bethlehem, Pa., $2,297,663.85; National Forge & Ordnance Co., Irvine, Pa., $118,348.66; Midvale Co., Philadelphia, $2,094,514.95; Timken Roller Bearing Co.'s Steel & Tube division, Canton, O., $15,890.60; Youngstown Sheet & Tube Co., $12,234.03; Lakeside Bridge & Steel Co., Milwaukee, $11,800.00; International Derrick & Equipment Co., Columbus, O., $16,788.00; Koppers Co., Bartlett Hayward division, Baltimore, $11,800.00; Stewart Hartshorn & Co., New York, $11,238.60.

LICENSE SCRAP EXPORTS

During October, nine licenses were issued by the government for the exportation of tin plate scrap. All went to Japan, totaling 558 tons, valued $9,690.88.

Consumers' Nine Months Net Profit 5.3% of 1937

■ Net profit for 69 companies among equipment manufacturers, suppliers, and other leading iron and steel consumers in the first nine months totaled $6,770,500, or only 5.3 per cent of the $126,648,977 net profit reported by the identical companies in the comparable period last year. Thirty of the 69 companies reported a loss during the third quarter, whereas only five had a loss in the same period a year ago. STEEL's tabulations, Oct. 31, p. 14, included 33 companies, while the subjoined table lists 36. All figures are net earnings except where asterisk denotes loss.

	Third Quarter		—Nine Months—	
	1938	1937	1938	1937
Doehler Die Casting Co., Toledo, O.	$23,237	$260,247	$132,966	$936,208
Electric Auto-Lite Co., Toledo, O.	191,228	866,091	7,571	3,182,467
Eureka Vacuum Cleaner Co., Detroit	86,349*	50,525	235,369*	53,179
Hoskins Mfg. Co., Detroit	57,684	148,082	173,113	501,082
U. S. Hoffman Machy. Corp., New York	57,326*	115,713	184,951*	579,765
Yellow Truck & Coach Mfg. Co., Pontiac, Mich.	43,105	1,298,090	364,350	2,874,739
Babcock & Wilcox Co., New York	945,465*	897,400	2,703,815*	1,391,919
International Business Machines Corp., New York	2,032,056	1,992,647	6,051,359	5,932,706
Maytag Co., Newton, Iowa	236,327	643,202	322,155	1,948,471
Pittsburgh Screw & Bolt Corp., Pittsbg.	103,366*	279,836	330,380*	1,270,173
Sullivan Machinery Co., Chicago	121,826*	100,610	432,426*	290,506
Briggs & Stratton Corp., Milwaukee	112,699	255,012	509,643	1,155,675
Cutler-Hammer Inc., Milwaukee	168,775*	310,146	244,534*	1,312,639
Link-Belt Co., Chicago	321,388	861,737	703,740	2,600,322
American Radiator & Standard Sanitary Corp., New York	866,589	2,807,687	65,888	6,537,097
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.	20,898*	118,852	167,158*	354,372
Gabriel Co., Cleveland	7,276*	20,926*	27,121*	12,796*
Crosley Radio Corp., Cincinnati	41,976*	115,735*	43,848*	103,581
Chicago Railway Equipm't Co., Chicago	6,599	172,854	63,757*	528,145
Byron Jackson Co., Berkeley, Calif.	62,143	59,113	481,306	1,062,607
Pressed Steel Car Co., Pittsburgh	248,959*	76,316	941,731*	682,732
American Steel Foundries Corp., Glassport, Pa.	543,533*	1,150,484	1,409,728*	3,562,637
Atlas Tack Corp., Fairhaven, Mass.	19,656	13,804	16,629	46,840
Borg-Warner Corp., Rockford, Ill.	477,858*	1,256,857	1,111,462*	5,561,155
Easy Washing Machine Corp., Syracuse, N. Y.	60,988*	108,994	319,405*	405,197
General Steel Castings Corp., Eddystone, Pa.	628,350*	255,642	1,247,020*	343,891
Chapman Valve Mfg. Co., Indian Orchard, Mass.	112,746	255,295	528,571	706,907
Electrolux Corp., New York	301,435	541,657	1,513,140	2,153,893
Holland Furnace Co., Holland, Mich.	640,632	633,054	760,997	730,125
Mack Trucks Inc., New York	282,837*	324,327	754,645*	1,264,587
Evans Products Co., Detroit	166,872*	167,396	536,686*	347,816
Motor Wheel Corp., Lansing, Mich.	171,979	439,018	87,524	1,593,242
Timken Roller Bearing Co., Canton, O.	217,097	2,756,245	381,298	9,548,428
Packard Motor Car Co., Detroit	2,053,825*	2,324,852*	3,298,790*	1,494,205
L. A. Young Spring & Wire Corp., Detroit	410,691*	59,741	815,493*	1,261,306
Savage Arms Corp., New York	109,746	227,440	32,561	422,524
Totals	$900,824*	$17,042,601	$2,735,508*	$62,728,342

South's First Wire Mesh Fabricating Plant

■ W. H. Oldham, district manager for Republic Steel Corp. at Birmingham, Ala., last week gave some details relating to the company's plant for manufacturing wire reinforcing mesh to be built at Gadsden. This project was mentioned briefly in Republic's announcement of an appropriation of $1,250,000 for improvements and expansions.

The plant, first in the South for fabricating wire mesh, will be 72 x 480 feet, with a crane runway yard 72 x 360 feet. Production will start about April 1. Capacity will be 2000 tons per month. It will be operated by Truscon Steel Co., subsidiary.

MEETINGS

INDUSTRY CONGRESS SEEKS TO SPEED RE-EMPLOYMENT

■ MEANS to accelerate recovery and put men back to work will be considered at the forty-third Congress of American Industry at the Waldorf-Astoria, New York, Dec. 7-9, under sponsorship of the National Association of Manufacturers during its annual convention. "Making America Click" is the theme for the congress.

Among specific discussion subjects are Employment Relations and Wagner Act Changes, Wages and Administration, Monopoly Investigation, Public Relations, Industry and Social Security, Taxes, National Defense, Regulating Competition and How Research Is Serving Industry.

Charles R. Hook, president, American Rolling Mill Co., Middletown, O., is president of the Manufacturers' association, and Noel Sargent, 14 West Forty-ninth street, New York, is secretary.

AIR CONDITIONING TOPIC FOR HEATING ENGINEERS

Twentieth anniversary of the establishment of its research laboratory will be observed by the American Society of Heating and Ventilating Engineers when it conducts its forty-fifth annual meeting, William Penn hotel, Pittsburgh, Jan. 23-26. Technical sessions will feature research problems, including air conditioning in industry, insulation materials, and applications of solid fuels in heating and air conditioning. A. V. Hutchinson, 51 Madison avenue, New York, is society secretary.

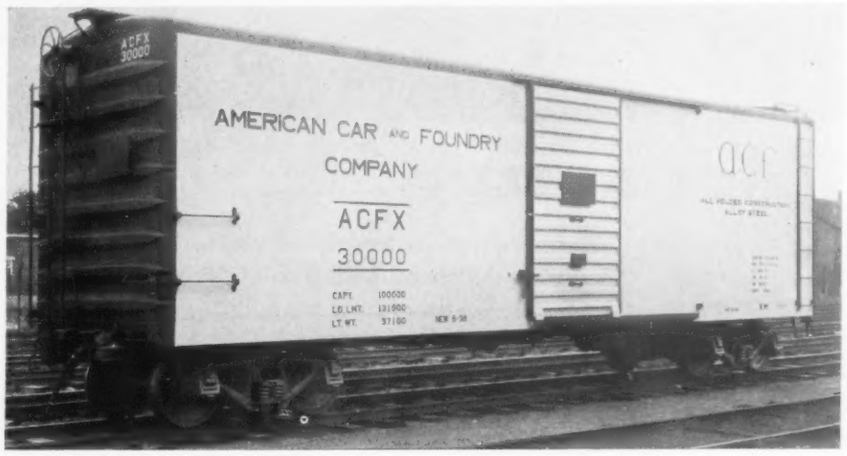
FORUM AT ANNUAL MEETING OF ENGINEERING COUNCIL

Nineteenth annual meeting of the American Engineering council will be held at the Mayflower hotel, Washington, Jan. 12-14. The program schedules four sessions constituting the council's third forum on questions of public interest, an all-engineers' dinner, and a business session.

Subjects to be considered in the forum are: "Economic Status of the Engineer"; "Engineering Factors in the Size of Business"; "Public and Private Construction and the Engineer's Relation to Them"; and "National Planning and the Engineer's Relation to It."

Engineering society secretaries hold their ninth annual conference concurrently.

New Type Welded Freight Cars on Exhibition Tour



■ American Car & Foundry Co., New York, has developed two new designs of light-weight, welded steel freight cars. A 50-ton all-welded alloy steel box car, and a 40-ton welded-riveted refrigerator car built according to the designs, have started on an exhibition tour of the East and Middle West.

Low alloy, high-tensile corrosion-resistant steel has been used to the fullest extent in both types. The box car weighs 37,500 pounds, and the refrigerator, 44,200 pounds.

Developments in the box car, illustrated above, include steel ends with extra long corrugations extending around the body end posts, steel doors of increased rigidity, underframe of integral all-welded construction.

Developments in the refrigerator car include a removable steel bulkhead, ice bunker, ice hatch, and a method of using dry ice in combination with water ice. The cars are to be exhibited at Washington, Union terminal, Nov. 21; Pittsburgh, B. & O. passenger station, Nov. 23; Cleveland, Union terminal, Nov. 25; Chicago, LaSalle station, Nov. 28-29; St. Louis, Union terminal, Dec. 1-2.

Irvin Works To Open Dec. 15

■ CARNEGIE-ILLINOIS STEEL CORP. will formally open its Irvin works Thursday, Dec. 15. The mill, which will produce hot and cold-rolled sheets and strip as well as cold reduced tin plate, has been under construction since May 22, 1937.

Originally scheduled to open last summer, construction has been delayed by unfavorable business conditions. Recent heavy demand for sheet and strip products, however, has again pushed work and practically all major departments are now in operation.

First to reach completion was the cold reduction department, which has been rolling since March. Hot-rolled strip has been brought from the McDonald plant in the Youngstown district. The tin plate department has been turning out cold reduced tin plate since July, while the hot mill, last major unit to reach completion, was started Oct. 15.

Slabs for the new mill will be rolled at the slabbing mill just completed at Edgar Thomson works, Braddock, Pa. First slabs were rolled in that mill Nov. 1 and the first tonnage of steel ready for further finishing was made last week. Although still running largely on a test basis, the combined mills now are ready to start commercial production.

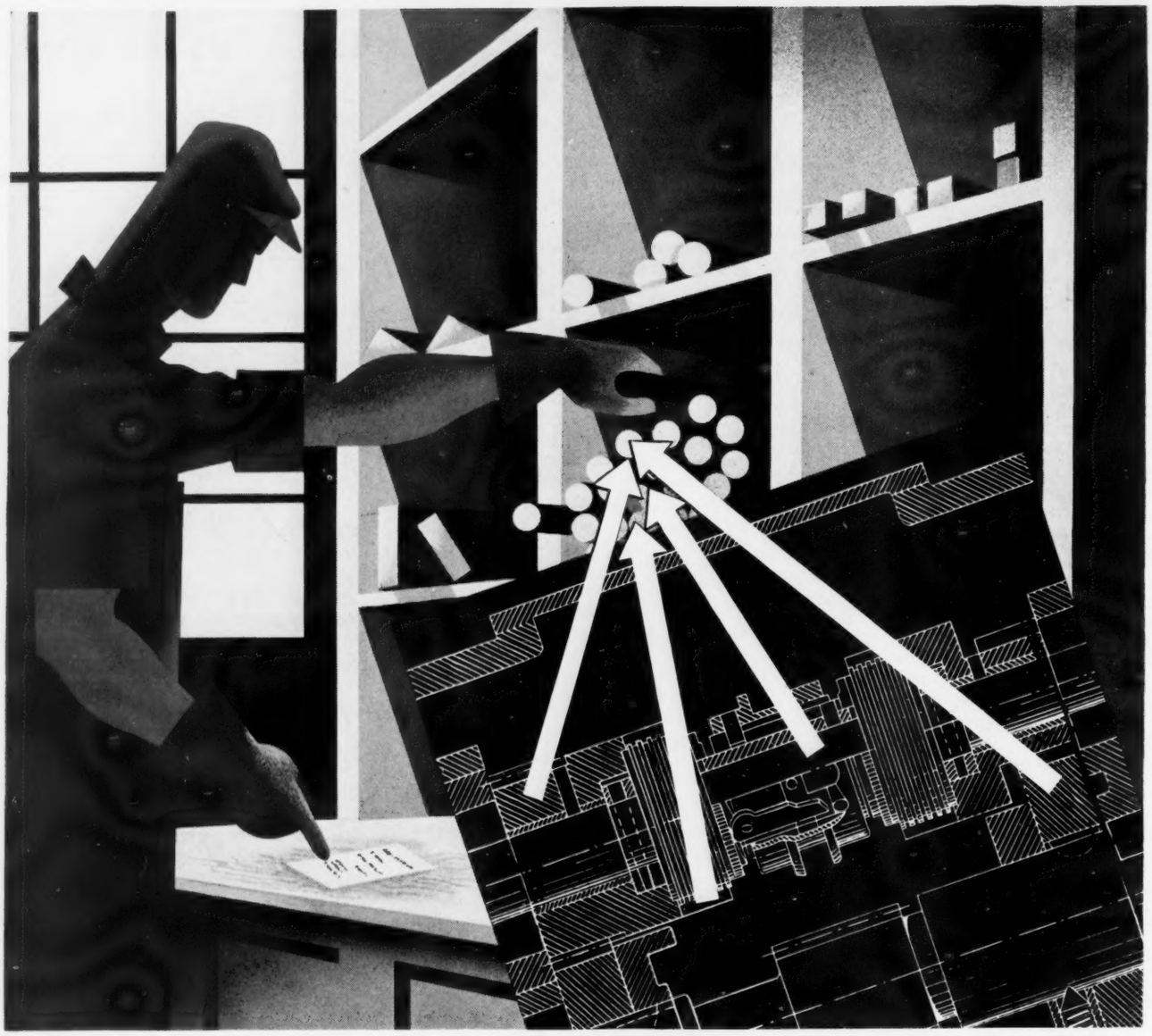
Plans for the opening of the mill include an all-day program. Special trains will transport invited guests to the mill.

Machine Tool Orders Register Slight Gain

■ October machine tool orders were slightly higher than in September, according to the National Machine Tool Builders' association, Cleveland. The association's monthly index stands at 118.1 compared with 117.4 in September. An increase in domestic orders was offset by a somewhat lower volume of foreign sales.

The 3-month average trend continues upward, the index in October standing at 118.8, compared with 109.3 in September.

■ Factory sales of all sizes and types of stokers in September increased 6½ per cent over September, 1937, according to a department of commerce report, based on statistics supplied by 112 manufacturers, producing approximately 95 per cent of total value of industry's output. September sales showed substantial increase over August.



MANY PARTS...ONE STEEL

SPECIALIZATION has its spheres, but in a manufacturing material ***versatility*** usually has the advantage. For instance, a truly versatile steel—one that can be made to meet the individual requirements of different applications—offers economies and shop efficiencies obviously impossible with a multiplicity of types.

One company building machine-shop equipment has standardized on a Chrome-Manganese-Moly steel for a great variety of parts. It was selected because it can be heat treated to a high hardness and still remain readily machinable.

Versatility is a feature of Moly steels in general. It reduces the chances of error by simplifying stockroom procedure and inventories; permits greater standardization of processes; assures more uniform results; and is an important factor toward economy.

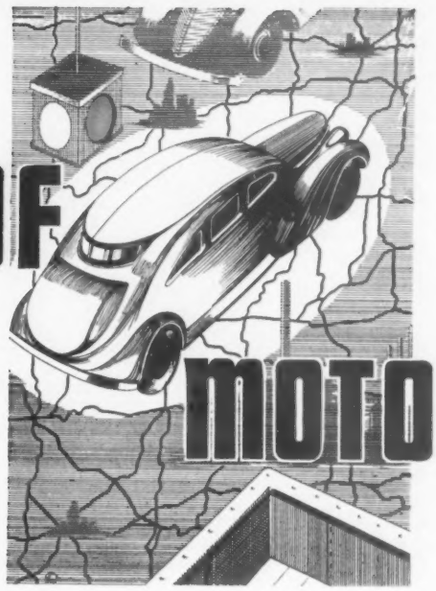
The wide range of applications of Moly steels has been definitely proved in laboratory, shop and field. Our book, "Molybdenum in Steel," offers a quick technical survey of their scope. We invite engineers and production executives to write for it. Climax Molybdenum Company, 500 Fifth Avenue, New York City.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

Climax Mo-lyb-den-um Company

MOLY

MIRRORS OF MOTORDOM



DETROIT

■ UNEASINESS over the labor situation continues in evidence and while there have been several minor outbreaks in the last ten days, no serious tie-ups have developed as yet.

A strike at Budd Wheel Co. for one day curtailed operations at Packard and threatened to affect Dodge, but work was resumed last Monday. A strike vote was authorized by the UAW executive committee at the request of the Hudson local here, and failed to produce the two-thirds majority necessary for passage. Later in the week an attempt to stage a dues-collection drive among Plymouth workmen collapsed after city and company police dispersed collection agents who had gathered at the plant gates Wednesday.

In Jackson, Mich., trouble developed at Reynolds Spring Co., employing 1200. The company's contract with the UAW had expired and the union called a strike Nov. 9 for the usual reasons—higher wages, closed shop and seniority. The management through newspaper advertisements urged employes to return to work. Last week 2000 union pickets, many of them recruited from working forces at nearby plants of Ryerson & Haynes and Eaton Mfg. Co., gathered to prevent any return to work and were met by a force of 50 police and 100 vigilantes. After minor skirmishes a truce was arranged pending conferences between the management and union leaders.

■ MEANWHILE General Motors Corp. has made a concerted step toward guaranteeing income security for 150,000 employes on an hourly wage basis, with two plans for loans to workmen during idle periods. One plan covers employes with the corporation five years or more and permits them to be assured of a

BY A. H. ALLEN
Detroit Editor, STEEL

Material appearing in this department is fully protected by copyright, and its use in any form whatsoever without permission is prohibited.

weekly income at least 60 per cent of standard earnings. The weekly guaranteed income is made up of (1) pay for the amount of work performed (part-time employment, for example); (2) pay for any other regular employment; (3) unemployment compensation; and (4) an advance to be made by the corporation to insure a minimum weekly income of at least 60 per cent of standard.

Important feature of the plan is that the advance made by the corporation is repayable only in terms of opportunity to work and bears no interest rate. The employe repays the advance at the rate of one-half the amount by which his later earnings exceed 60 per cent of standard.

The corporation calls the arrangement an income-security plan, and emphasizes that it is definitely not an annual-wage plan. The second plan, applicable to employes with service records from two to five years, is termed a lay-off benefit plan and is substantially the same as the first plan except that the participants will be entitled to receive 40 per cent of standard earnings as guaranteed weekly income, and the advance made by the corporation is limited to 72 hours' earnings at the employe's latest average hourly rate.

Details of these plans have been in process of development for some

■ **Forged steel steering knuckles are inspected for flaws by the Magnaflux process at the Pontiac plant. The part is first placed in a polarizing fixture where it is magnetized, then dipped into a tank of liquid containing iron filings which will adhere to the full length of any discontinuities. After checking, the part is demagnetized as shown here and sent on to machining operations. It is pointed out that in steering knuckles the magnetizing is done circularly so that the flux will run crosswise to the direction of possible flaws which occur either lengthwise or longitudinally**

time by the corporation and formal announcement of their institution on Jan. 1, 1939, points out that the program is still in the experimental stage but there is every reason to believe the plans will be feasible. Now under consideration is a third plan which will cover the 37,000 salaried employes of General Motors.

An important aspect of these wage security plans is their community benefit in cities where business activity is dependent in large measure upon employment in a GM plant. It is felt employes now can be kept off relief rolls, and further that merchants in a community now will be insured against any collapse in their business incident to large-scale layoffs in automobile plants.

Considerable speculation is being heard about the effect the announcement of these wage-security plans may have on the recently filed UAW demands for amendments in the agreement it has with General Motors. It is pointed out that the plans may be declared inoperative in case of war, floods, *strikes* and other extraordinary occurrences; also that the "standard work week" is defined as 40 hours, thus probably making the plans void if demands for a 32-hour work week were successful.

■ AN UNUSUAL development which has "stolen the show" in the Plymouth exhibits at New York and Detroit is the vacuum-operated top installed as standard equipment on convertible coupe models.

The opening or closing of the top is controlled by a three-way lever on the dash which opens valves admitting manifold suction to two power cylinders located at either side of the car underneath. These cylinders, 30 inches long and about 3½ inches in diameter, enclose double-end pistons which in turn are connected to bell cranks attached to the top frame through the central body post. Springs are provided to counterweight the top as it is lowered. A central handle on the header board of the car controls the locking of the top as it is raised and the front edge lowers onto three attachment posts. Raising or lowering is accomplished in about 12 seconds.

The three-way valve is marked "Raise—Neutral—Lower" and permits stopping the top anywhere in its travel by dead-ending the air in the power cylinders. Drivers are cautioned not to operate the top while the car is in motion lest they suddenly find their vehicle converted into a sailboat with disastrous effects on the top.

The idea originated with a German inventor who equipped a Plymouth salesman's car with the device and subsequently sold Plymouth on adopting it as standard equipment. A company has been formed in Ypsilanti, Mich., to manufacture the devices and at present about 20 convertibles have been produced with this feature. It is used only on the Plymouth convertible coupe and is expected to push the popularity of this model appreciably.

■ NOW in formative stages is an interesting development at Shreveport, La., where the Feroline Corp. has been formed to manufacture and sell a new type of anti-knock fluid for gasolines. It is known as iron carbonyl and is produced by evaporating dry ice and passing the gas over incandescent coke in the total absence of air, converting the CO_2 into CO, the latter then being passed over iron powder at 350 degrees Fahr., forming a mist which is condensed to a liquid having the chemical formula $Fe(CO)_5$ and known as iron carbonyl. It weighs about 12 pounds per gallon and is being marketed for around $8 per gallon, compared with a figure of approximately $12 per gallon for lead tetraethyl now used widely as the antiknock agent in gasoline.

Swedish iron powders are now used in making the liquid although it is possible arrangements may be made for domestic suppliers to fill requirements. It is understood iron carbonyl also is being used to some extent in the removal of sulphur from oil and gas.

Refrigerator production in the Detroit district has been tapering off in recent weeks, although Norge was helping to get production started last week in its new division where a sealed refrigeration unit will be built, and where numerous delays have been encountered in getting all equipment functioning properly.

Chevrolet is using a new type of barrel tappet in the 1939 model engines; it is cast solid and then drilled out and a spherical seat formed for the pushrod.

Low-alloy high-tensile steel is being used to advantage in the new line of Dodge trucks for cabs, bodies and other sheet metal parts. The new trucks range from ½ to 3-ton capacities and include a new 3-ton diesel-engined job. Engine in the latter is a 6-cylinder 4-cycle type, featuring automatic injection advance, simplified injection pump, anticlogging nozzle, and energy-cell controlled combustion.

A new edge-type gasoline filter is being used in conjunction with Dodge engines for 1939. Unlike conventional strainers in which the filtering element is a screen, the new device comprises closely stacked thin sheets of brass with small spaces between them through which the fuel is passed. It is stated that the action of filters of this type is capable of such refinement that ink passed through from one side will emerge from the other side free of color.

Cadillac anticipated that about 60 per cent of the buyers of LaSalle and Cadillac 61 models would want running boards attached, but has discovered that the majority favors the running boardless style, some distributors ordering 100 per cent without the boards. Where the boards are eliminated, stainless steel strips are attached to the body below the doors.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1936	1937	1938
Jan.	377,244	399,186	227,130
Feb.	300,810	383,900	202,589
March	438,943	519,022	238,598
April	527,625	553,231	238,133
May	480,518	540,377	210,183
June	469,368	521,153	189,399
July	451,206	456,909	150,444
Aug.	275,934	405,072	96,936
Sept.	139,820	175,630	89,623
Oct.	230,049	337,979	*250,000
10 mos.	3,691,517	4,292,459	1,893,035
Nov.	405,799	376,629	.....
Dec.	518,958	347,349	.....
Year	4,616,274	5,016,437	.....

*Estimated.

Estimated by *Ward's Reports.*

Week ended:	1938	1937†
Oct. 22	68,360	91,905
Oct. 29	73,335	90,155
Nov. 5	80,030	89,770
Nov. 12	86,300	85,325
Nov. 19	96,735	85,757

†Comparable week.

	Week Ended Nov. 19	Nov. 12
General Motors	44,250	42,100
Chrysler	24,950	20,350
Ford	16,975	13,450
All others	10,560	10,400

Buy Equipment in Ohio For Mill in Ireland

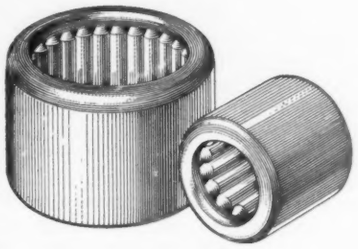
■ Considerable equipment for the new Irish Steel Co.'s sheet, tin plate and merchant bar mills now being built near Queenstown, Ireland, has been purchased in this country. Richard Kreft and Arch Huxley, directors, sailed last week from New York on their return to Queenstown.

In Cleveland they completed negotiations for some of the sheet and tin mill equipment of the former Carnahan Sheet & Tin Plate Co., Canton, O.

This mill will be the first of its kind in Ireland.

TORRINGTON NEEDLE BEARING

DESIGN AND SERVICE FEATURES



SMALL BEARINGS SAVE SPACE AND WEIGHT

Give Ample Load Capacity

THE small size of the new Torrington Needle Bearing aids materially in reducing space and weight, and is a special advantage in such applications as the planetary transmission illustrated. Further space and weight economies can be effected in the housing design, for the shape of the bearing—long in proportion to its diameter—permits the use of an extremely simple housing.

Because the bearing construction provides many linear inches of contact, small sizes of the Needle Bearing have ample capacity for high radial loads, in either rotating or oscillating applications. If service requirements are unusually severe, as in planetary transmissions, additional capacity is provided by increasing the depth of case of the hardened retaining shell, which serves as the outer raceway.

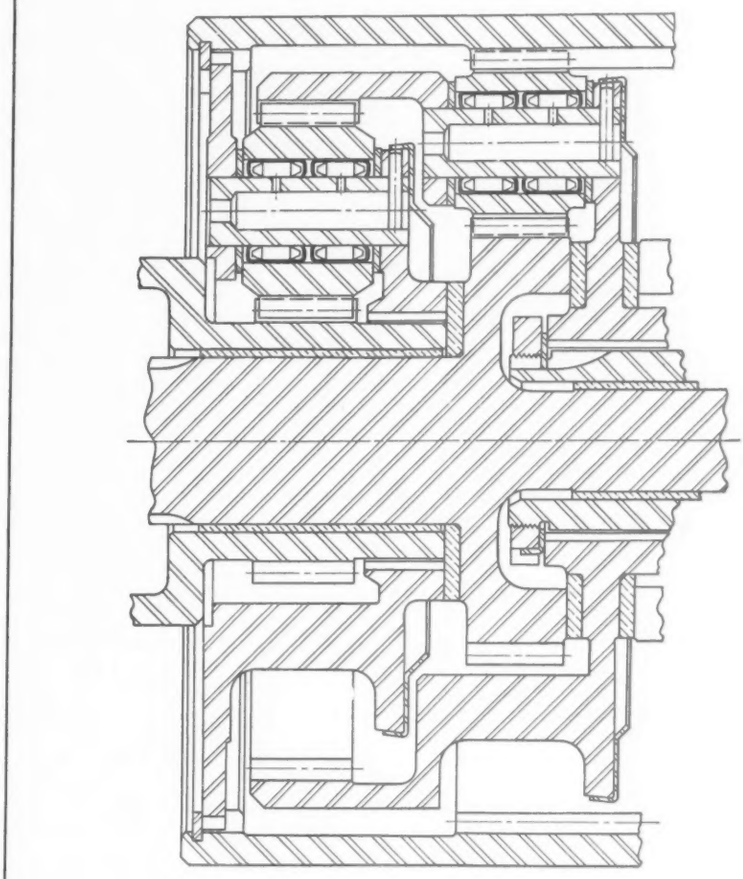
Ease of Assembly

The bearing's full complement of small-diameter rollers and its hardened retaining shell form a single compact unit, easily mounted in the housing and ideally suited to production-line assembly methods.

Ease of lubrication is a further advantage. The turned-in lips of the retaining shell hold ample lubricant for long periods of operation, and also exclude dirt from the bearing.

All these advantages are surprisingly economical, for the bearing itself is low in cost, and its use effects important economies in housing design and assembly time.

The Torrington Engineering Department offers to manufacturers the benefit of its long experience in laying out bearing applications. Further information is contained in the Torrington Needle Bearing Catalog, available on request. Write for Catalog No. 10.



THE TORRINGTON NEEDLE BEARING IN A PLANETARY TRANSMISSION— A TYPICAL EXAMPLE OF EXTRA CAPACITY BEARINGS FOR SEVERE SERVICE

The Torrington Company
ESTABLISHED 1866
Torrington, Conn., U.S.A.

Makers of Ball and Needle Bearings

Branch Offices in all Principal Cities

TORRINGTON
NEEDLE BEARING

European Steel Industry Feels New Impetus; French Position Insecure

By VINCENT DELPORT
European Manager, STEEL

LONDON

■ NOW that the disturbance brought about in industry and trade by the European crisis has practically subsided, underlying conditions, particularly in the iron and steel export trade, show a tendency toward improvement.

One of the main nerve centers of the steel export business on the continent of Europe is Brussels.

Reports from that center show steady gains in the volume of business since the end of August.

Activities vary with each country. The British steel trade has been somnolent for the greater part of the year, but the outlook at present is better. Large stocks, mainly pig iron and semifinished steel, have gradually dwindled.

Continental imports have been severely restricted. Domestic demand is showing signs of revival, but is limited to immediate requirements, because it is generally believed prices will be reduced at the beginning of the new year. Costs in the iron and steel industry are being ascertained, and the results will be submitted to the Import Duties Advisory committee.

While certain factors, such as labor and transport, show no downward tendency, prices of raw materials have declined. In view of the method by which wages of the iron and steel workers are scaled, a reduction in selling price would bring about a slight reduction in wages.

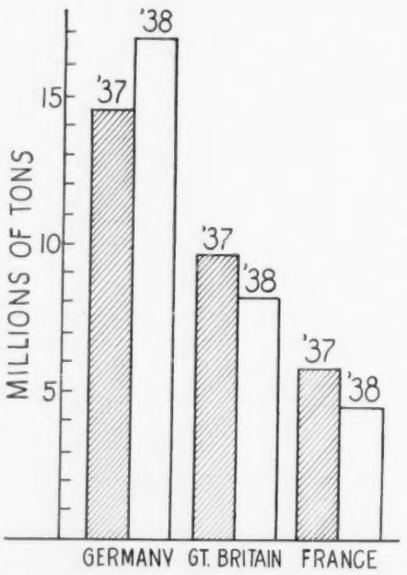
Armament Not Profitable

It is, therefore, hoped by the consuming industries, especially by automobile manufacturers and shipbuilders, that before the end of November lower iron and steel prices will be announced. This would not only serve to stimulate domestic business, but would assist export trade, as present prices are not competitive when set against those quoted by Continental producers.

Armament work helps to keep many industries occupied, but it is a two-edged sword: It interferes with normal business and, according to those engaged in such work, it does not yield large profits, since the government controls prices and these must be based on costs as submitted to the authorities.

General engineering is fairly active, but shipbuilding continues dull. There are signs of awakening in the automobile industry. The motor show in October started inauspiciously, but ended satisfactorily, and overseas markets showed considerable interest.

While the iron and steel industry is now in a healthier condition, production still is well below last year's level. The output of steel in Great Britain for the first nine months this year was 8,023,300 tons, compared with 9,548,300 tons in the corresponding period last year, a reduction of 16.2 per cent. The September output was 754,700 tons, down 35 per cent compared with 1,163,000 tons in September, 1937.



■ **Production of steel ingots and castings in first nine months:**

	1937, tons	1938, tons
Germany	14,578,889	16,816,978
Great Britain	9,548,300	8,023,300
France	5,746,900	4,447,200*

*September estimated.

The tendency from now on should be toward a gradual increase, but it is fairly certain production for this year will be 20 to 25 per cent below that of last year.

Import and export figures also indicate the extent to which iron and steel trade in Great Britain has slumped this year. Imports for the first nine months were 1,171,788 tons, against 1,262,020 tons in the corresponding period of 1937. Exports were 1,418,162 tons and 1,976,858 tons, respectively.

Conditions in France show little or no improvement. France was affected more directly and more deeply by the European crisis than Great Britain. In addition, that country continues to suffer from the effects of political confusion and antagonism between labor and employers, intensified by the difficult application of the social laws brought about by the Blum socialist government in 1937. As a result the usual nervousness and lack of confidence prevails, accompanied by occasional flights of capital and rumors concerning the future of the French franc.

Premier Daladier, exercising semidictatorial powers granted by the chamber of deputies, announced 32 decrees Nov. 12, followed by 12 others Nov. 14. These revalued the gold reserve of the Bank of France from 22.96 to 37.69 francs to the dollar, giving the treasury a paper profit of more than $500,000,000. Additional taxes have been imposed, estimated to yield $185,531,000. Effect of these provisions is expected to reduce the deficit by about $520,000,000, which will nearly balance the budget.

The 40-hour week is not changed in principle but modifications for three years substitute a 5½ or 6-day week for the former 5-day week. More than 40 hours per week are allowed if notice is given the ministry of labor and the extra hours are paid for as overtime.

The difficulty of the situation is increased by the fact that a French government cannot rule the country without a majority in parliament, and at present the majority is in a state of flux, the 20-odd parties and sub-parties appearing to be shuffled like a pack of cards. In the meantime, production is at a low level and shows little sign of improving, and many enterprises find it difficult to make both ends meet.

France Needs Leadership

There is no doubt that if France could find a strong leader, grouping around him non-party men of experience and organizing capacities, the greater part of the country would gladly get back to work. France is a rich country in its soil and sub-soil. Fundamentally the population is hard-working and thrifty, but these qualities have been dulled by strife between extremists, both among the leaders of the working-classes and the big employers of labor. It is to be hoped that reason, common sense and co-operation between employers and workers will return before deterioration has gone too far.

In Germany conditions continue

(*Please turn to Page* 90)

Mechanization Defended; "Social Inventiveness" Now Emphasized

■ SHIFTING of emphasis from technological to sociological inventiveness was urged by speakers at a forum on invention and engineer's relation to it, sponsored by the American Engineering council, Hotel Statler, Detroit, Nov. 11, with the Michigan Engineering society acting as host.

Engineers, economists and industrialists participated in discussions following addresses at afternoon and evening sessions. Their views were consolidated in a report which will be submitted to the National Economic committee. Afternoon session was attended by about 100; the evening meeting by nearly 200.

Introductory address was given by Frederick A. Allner, vice president, Pennsylvania Water & Power Co., who explained the functioning of the engineering council.

Nation Needs Spirit of Invention

Speaking on the social and industrial values of research and patents, K. H. Condit, National Industrial Conference board, said that while mechanical invention may have outrun social invention, as long as the spirit of invention is kept alive the chances for survival as a nation are bright. He pointed out that even the Constitution is an American invention, as well as the system of government, invention forming the basis for the country's livelihood and standard of living.

Dr. Lyman J. Briggs, director, bureau of standards, in outlining the position of government in research, suggested that the federal government become a central agency for research into the natural sciences looking toward the creation of new industries to take up slack in employment. He declared the unemployment problem will not be solved by throttling technology, since the latter has brought more goods within the price range of a larger portion of the public.

Dr. Briggs said the annual bill for research of all types by the federal government is $57,700,000. Last year engineering research cost $21,000,000; research in natural sciences $22,400,000; surveys and mapping $9,400,000; public health $2,700,000; and physical sciences $2,200,000. This sum, he pointed out, is insignificant when compared with the annual estimated loss from corrosion of metals, for example, which has been set at $500,000,000.

On the practical value of research, T. A. Boyd, General Motor's research laboratories division, had a number of interesting observations. He cited a 15 per cent increase in the employment of the automotive industry in the period 1929 to 1937, in which time automobile prices were reduced more than 15 per cent, largely as the result of applied research.

Harry H. Semmes, chairman of the patents committee of the American Bar association, presented opinions of patent attorneys in which a critical appraisal of the operations of the patent office was featured. Also on the subject of patents was a discussion by Dr. Frank B. Jewett, vice president, American Telephone & Telegraph Co., who reviewed the development of patents from research work. In the absence of Dr. Jewett because of illness, his paper was read by O. W. King, assistant to the president of the company.

Summarizing the papers and discussions presented at the forum, Dr. William McClellan, president, Potomac Electric Power Co., and president of the American Engineering council, defended the mechanization of industry and emphasized that the machine and high-speed tempo of modern industry have not resulted in unemployment but have shortened the work period of a man's life.

The trend, therefore, must be toward shorter work-days and work-weeks and an increase in leisure time. Men will have to be taught how to make the best use of this leisure time, and this educational requirement is a challenge to the invention of new social viewpoints, Dr. McClellan added.

The next forum will be held in Washington, Jan. 12-14.

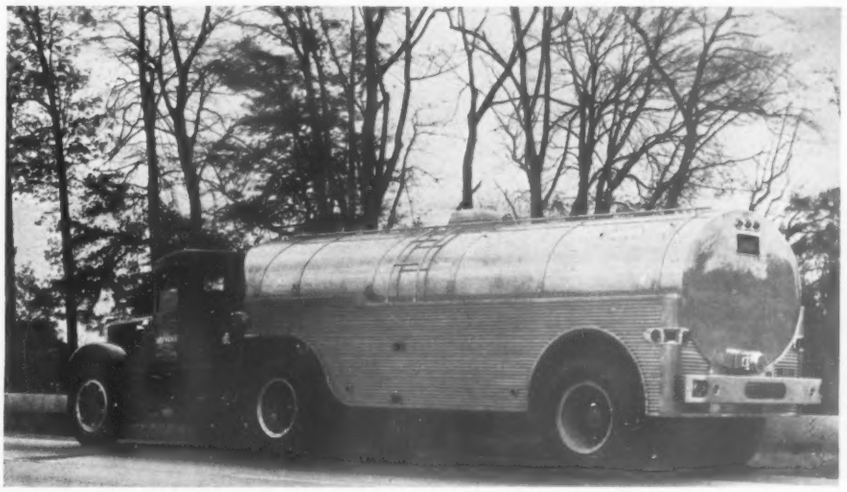
Low Inventories Reported By Purchasing Agents

■ Purchasing agents who attended the annual show sponsored by the Purchasing Agents' Association of New York Inc., Hotel Pennsylvania, New York, last week, indicated their inventories are the lowest in many months. Harold K. LaRowe, president, declared that buyers are now placing substantial commitments for all types of industrial supplies. Considerable buying is being done for January delivery, he said, with many consumers in the New York metropolitan district completing purchasing plans running well into the spring.

Bennett Chapple, vice president, American Rolling Mill Co., Middletown, O., and George A. Rebard, secretary-treasurer, National Association of Purchasing Agents, were speakers at the dinner, Nov. 15.

Products of more than 75 manufacturers were exhibited.

Stainless Tank Trailer Has High Load Capacity



■ This new tank trailer, designed for Dairymen's League Co-operative association by Edward G. Budd Mfg. Co., Philadelphia, weighs only 9100 pounds, yet has a maximum axle loading of 22,400 pounds. Capacity is 3600 gallons of milk. The chassis, fabricated of stainless steel by Budd, is in the form of an outside skirting with deep bulkheads extending from side to side. Tank, fabricated by Standard Steel Works, Kansas City, Mo., has a stainless steel interior shell, with aluminum exterior

EDITORIAL

Employment Incentives Are Needed

■ It is a fact well-known to industrial management that some of the new laws aimed to promote security actually increase the gravity of our greatest national problem—unemployment.

Outstanding are the unemployment insurance plans adopted by some states and apparently due for adoption in others. They are aimed at making the unemployment relief problem less onerous by levying a tax on payrolls, the monies thus collected to be paid out over a specified number of weeks to workers laid off. The immediate effect of such plans in the states that adopted them has been a general reduction in plant forces, so that layoffs would be few and tax payments, as a result, at a minimum.

The unfair labor relations act is another cause of unemployment since under its provisions every additional name on the payroll represents another potential source of labor trouble.

These laws, as well as the social security law and the new wages and hours law, multiply the work of accounting departments in direct proportion to the number of employes, so that the expense of accounting can be moved down as the number of employes is reduced.

Restrictive Rules Force Industry To Curtail Number of Employes

These laws, combined with high wages, high taxes, accident compensation insurance and other expenses, borne by business, force manufacturers to operate with the minimum number of employes. Jobs constantly must be mechanized or eliminated.

This trend threatens complete elimination of what still remains of the policy formerly followed by most substantial companies, of taking care of their old men and those who for any reason had lost their competency as workers. The efficiency that is necessary today forces department heads in most cases to operate under cost accounting systems that give them no latitude for adding expenses based only on sentiment. Today's business philosophy comprehends that relief now is the problem of government and not of the individual employer.

The governmental concept given expression in these laws must be changed materially if unemployment is not to be a permanent factor in this country. The required change is from the concept of "regulating business" to that of "helping business."

The feature of existing laws which defeats their real purpose is that each one imposes fresh burdens which add to the difficulties of the average employer. The purposes would be much better served by provisions of an incentive character.

Incentive Laws Would Be More Potent Than Penalties as Employment Aid

For example, a tax system devised to encourage employment should be much more effective than some present state unemployment insurance plans. The problem of relief and old-age security would be much simplified were favorable tax treatment accorded to companies maintaining thorough-going old-age retirement and other socially beneficial plans. Favorable tax treatment of companies creating more jobs would give impetus to solution of the problem.

Practically every individual in this country needs or wants many of the things that go to make up a good living. There actually is work for everyone willing and able to work. A carefully developed industrial incentive system, one that would encourage activity and expansion, would go far toward solving our unemployment problem and the problem of the unbalanced budget.

THE BUSINESS TREND

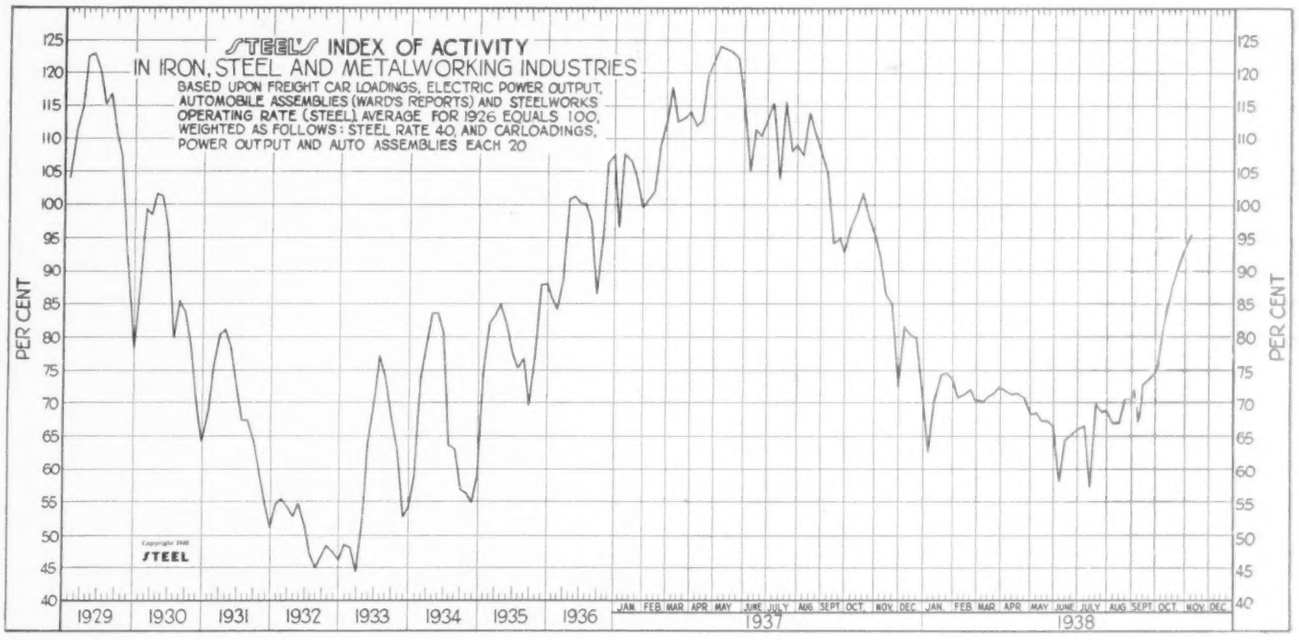
Activity Index Continues Upward Movement

■ BUSINESS news has continued generally favorable and little doubt can now be entertained as to the reality of the current recovery movement. Leading industrial barometers have furnished strong evidence that business is in a definite uptrend. However, the heavy dependence on the artificial stimulus of government spending has raised doubts as to the duration of the present upswing.

A more assured optimism prevails following the outcome of the recent elections, and it has taken the tangible form of increased activity in several of the primary commodity markets. Reflecting this improved outlook in the iron, steel and metalworking industries, STEEL'S index climbed to a new high for the year of 95.8 per cent in the week ended Nov. 12. This represents an increase of 2.4 points over the preceding week and has substantially widened the spread over the corresponding week last year, when the index stood at 86.5 per cent.

Steelmaking operations advanced 4 points to 61.5 per cent in the week ended Nov. 12. This represents the highest operating rate for the industry since Oct. 16, 1937. A further increase in the national steel rate is scheduled for the week ended Nov. 19. The rapid rise in steelworks operations the past few weeks has undoubtably placed the industry in a position to return a moderate profit from operations for the first time this year. A sharp increase in demand from the automotive industry and a steady improvement in requirements from publicly financed construction projects has aided measurably in bolstering the steel rate. However a more definite upward trend in steel consumption from other channels will have to materialize within the next few weeks to maintain the present rate of operations after the first of the year.

Automobile production in the week ended Nov. 12 exceeded the comparable week a year ago for the first time this year. Motor car assemblies of 86,300 units in the



STEEL'S index of activity gained 2.4 points to 95.8 per cent in the week ended Nov. 12:

Week ending	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Aug. 6	66.9	107.3	98.7	73.4	64.6	75.9	45.1	67.0	85.6	117.2
Aug. 13	66.9	113.8	92.6	77.5	64.6	74.7	44.6	67.4	86.2	116.8
Aug. 20	70.5	110.3	97.7	77.0	61.4	74.2	44.9	67.3	88.5	116.4
Aug. 27	70.3	108.5	94.0	77.3	60.3	71.6	45.2	66.5	87.4	116.9
Sept. 3	72.3	104.8	87.5	70.9	55.1	70.3	45.4	65.3	79.0	106.3
Sept. 10	66.8	94.3	83.1	70.1	53.5	65.5	44.9	60.9	85.9	114.0
Sept. 17	72.9	95.0	90.1	69.4	58.7	69.1	47.8	65.6	86.2	112.2
Sept. 24	74.0	93.0	86.2	68.5	58.1	68.2	48.0	65.2	83.8	110.7
Oct. 1	74.9	96.6	89.0	73.3	59.3	66.9	47.7	62.4	81.0	109.1
Oct. 8	78.9	99.0	93.4	74.9	54.7	67.4	48.4	61.5	79.4	108.2
Oct. 15	84.3	101.8	95.5	77.4	56.4	66.0	48.7	57.9	77.5	106.1
Oct. 22	88.7	97.5	97.1	82.4	58.2	60.9	48.7	58.2	77.4	104.8
Oct. 29	91.4	95.7	99.1	86.4	56.3	58.0	48.3	55.9	72.5	102.5
Nov. 5	93.4	92.3	102.1	88.4	55.0	52.3	48.5	56.0	71.5	98.1
Nov. 12	95.8*	86.5	107.9	88.8	54.9	50.7	47.7	55.5	73.0	91.6

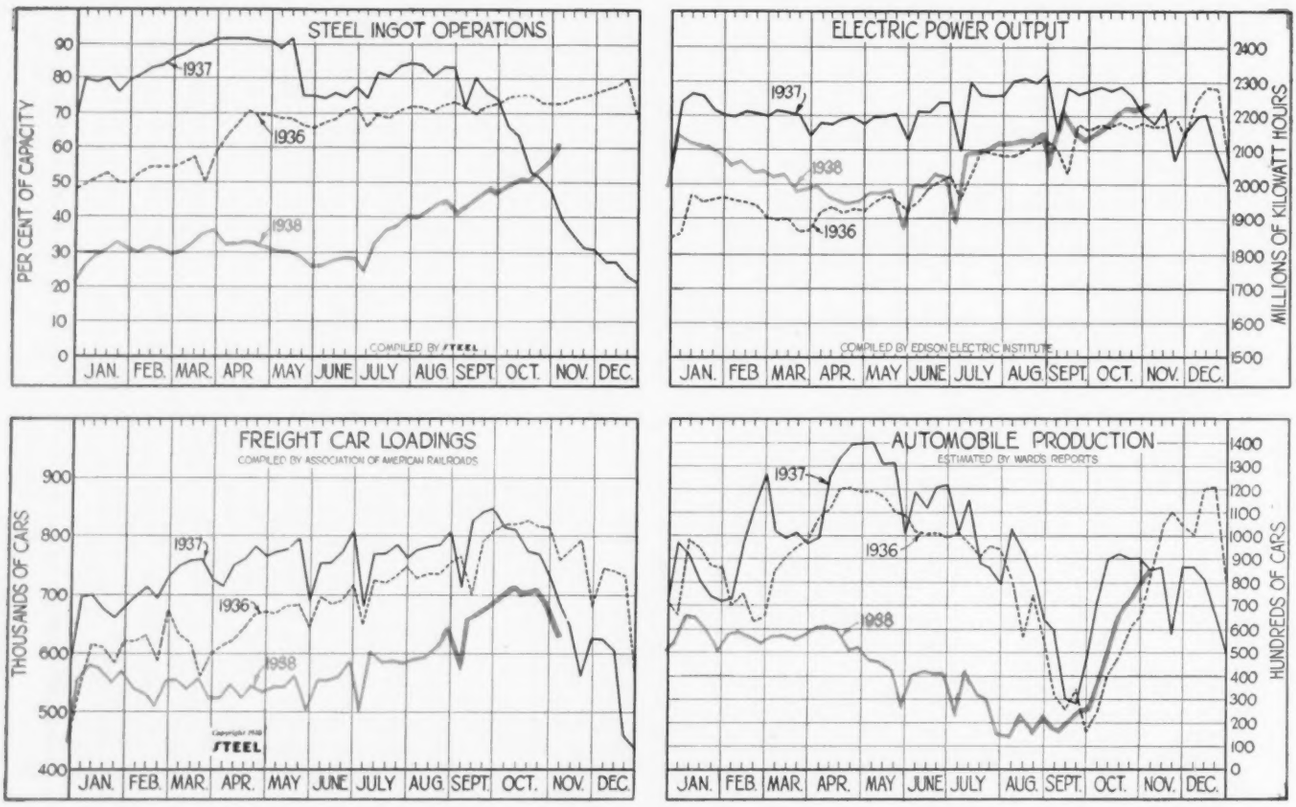
*Preliminary.

week ended Nov. 12 represents an increase of approximately 6000 over the previous week and compares with 83,325 units assembled in the identical week last year. Considerable interest was shown in the new models at the opening of the automobile shows at New York, Chicago, Detroit and other centers. A good volume of purchases were reported, thus substantially improving the sales outlook. The expectations are for an advanced volume of deliveries during the remainder of this month and a holding of that pace in December.

Revenue freight carloadings eased moderately to approximately 631,585 cars in the week ended Nov. 12, reflecting the unseasonal warm weather and the two holiday interruptions during the brief period. In the same week a year ago carloadings were placed at 689,614. Despite the recent decline in freight traffic the spread between the identical week last year has narrowed. Electric power consumption of 2,209,324,000 kilowatt-hours in the week ended Nov. 12 regained part of the loss incurred in the preceding week. Power output is now substantially above the corresponding week a year ago when consumption was estimated at 2,176,000,000 kilowatt-hours.

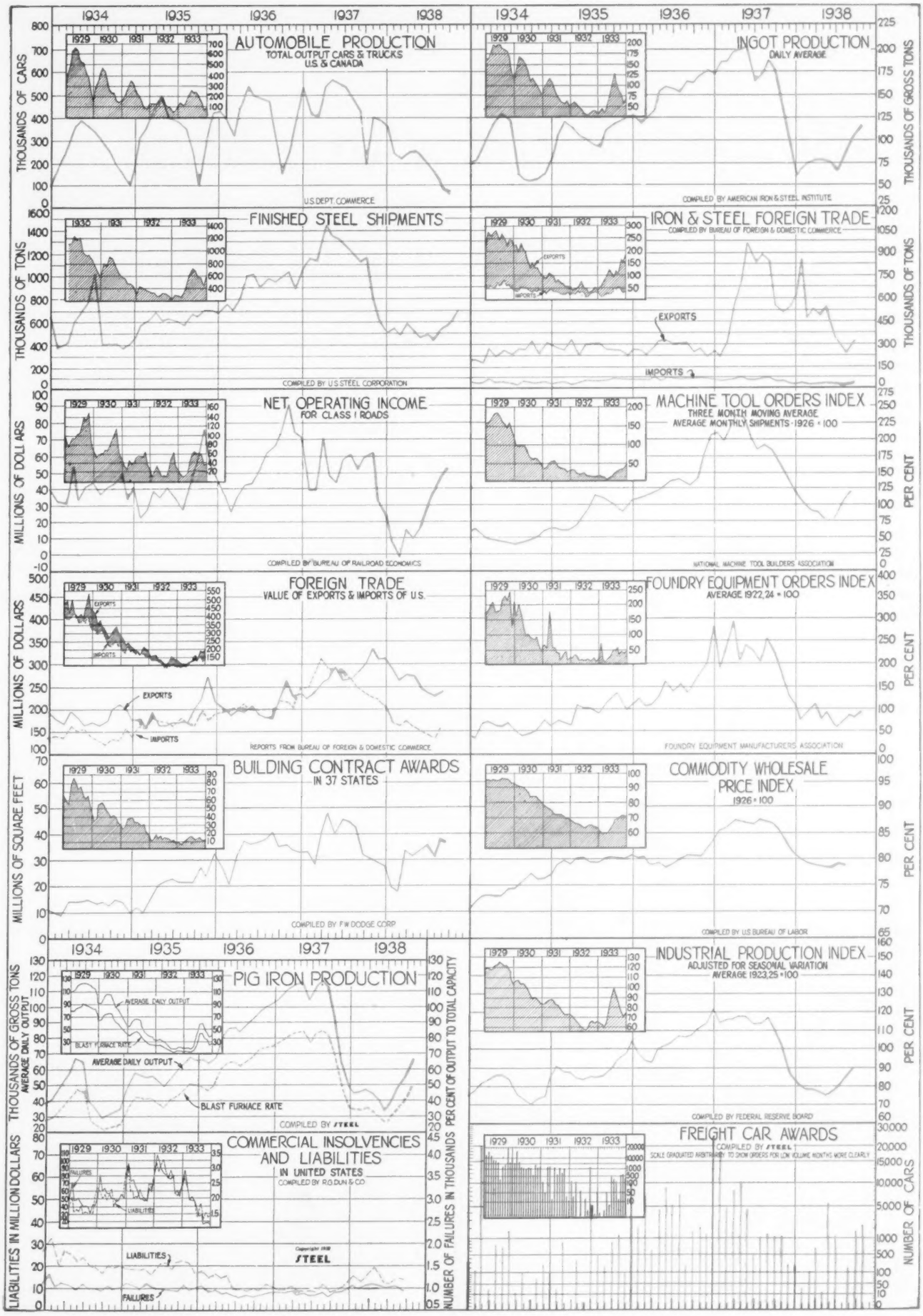
INGOT OUTPUT REGISTERS SUBSTANTIAL GAIN

Average daily ingot production in October totaled 119,921 gross tons, according to the American Iron and Steel institute. This compares with 106,310 tons in September and with 130,488 during October a year ago. Total production of 3,117,934 tons last month represents an increase of 17.3 per cent over the September volume of 2,657,748 tons and is also the first time since October, 1937 that the monthly output exceeded 3,000,000 tons. Output in the first ten months this year totaled 21,123,872, a decline of 53.9 per cent from the 45,875,521 tons produced in the corresponding period of 1937. During October ingot operations averaged 52.45 per cent of capacity, against 46.28 per cent in September and with 58.31 per cent in October, 1937. In the ten months ended Oct. 30, ingot operations averaged 36.23 per cent, less than half of the average of 80.59 per cent in the corresponding 1937 period.



Week ending	Steelworks Operating Rate Per Cent 1938	1937	1936	Electric Power Output Million KWH 1938	1937	1936	Freight Car Loadings 1938	1937	1936	Weekly Auto Output 1938	1937	1936
Aug. 6	40.0	84.5	71.5	2,115	2,261	2,079	584,050	769,706	728,293	14,771	78,736	81,804
Aug. 13	40.0	84.0	70.5	2,133	2,300	2,093	589,561	777,382	736,497	13,790	103,250	56,679
Aug. 20	41.5	81.0	72.0	2,138	2,304	2,125	597,918	781,247	734,973	23,940	93,339	73,709
Aug. 27	43.5	83.0	73.0	2,134	2,294	2,135	620,511	787,373	753,742	18,700	83,310	53,937
Sept. 3	44.5	83.0	71.5	2,148	2,320	2,098	648,039	804,633	764,680	22,165	64,200	31,628
Sept. 10	41.5	72.0	69.5	2,048	2,154	2,028	568,887	711,299	699,859	17,485	59,017	26,750
Sept. 17	46.0	80.0	72.5	2,214	2,280	2,170	660,142	826,565	789,510	16,100	30,150	33,165
Sept. 24	48.0	76.0	73.0	2,154	2,265	2,157	675,553	840,446	807,070	20,390	28,030	15,680
Oct. 1	47.0	74.0	74.5	2,139	2,275	2,169	697,938	847,245	819,126	25,405	45,830	22,800
Oct. 8	48.5	66.0	75.0	2,154	2,280	2,168	702,964	815,122	820,195	37,665	71,958	39,945
Oct. 15	51.5	63.0	75.0	2,182	2,276	2,170	726,612	809,944	826,135	50,540	89,680	48,195
Oct. 22	51.5	53.0	73.0	2,214	2,281	2,166	705,628	773,353	815,972	68,360	91,905	59,740
Oct. 29	54.5	51.0	73.0	2,226	2,254	2,175	708,840	771,655	814,175	73,335	90,155	66,985
Nov. 5	57.5	47.0	73.0	2,207	2,202	2,169	673,333†	732,145	759,318	80,030	89,770	84,305
Nov. 12	61.5	39.0	74.0	2,209	2,176	2,169	631,585*	689,614	784,672	86,300	85,325	104,248

*Preliminary. †Revised.


1934 1935 1936 1937 1938
AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
THOUSANDS OF CARS
U.S. DEPT. COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
THOUSANDS OF GROSS TONS
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
THOUSANDS OF TONS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
THOUSANDS OF TONS
NET OPERATING INCOME
FOR CLASS I ROADS
MILLIONS OF DOLLARS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
PER CENT
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
MILLIONS OF DOLLARS
EXPORTS
IMPORTS
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922-24 = 100
PER CENT
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACT AWARDS
IN 37 STATES
MILLIONS OF SQUARE FEET
COMPILED BY F.W. DODGE CORP.
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
PER CENT
COMPILED BY U.S. BUREAU OF LABOR
1934 1935 1936 1937 1938
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
THOUSANDS OF GROSS TONS
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923-25 = 100
PER CENT
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
FAILURES
LIABILITIES
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES
Copyright 1938 STEEL
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
NUMBER OF CARS

Houses for Colonial Village

A carefully engineered design, employing steel only where most economical, produces a house well within the reach of mass purchasing power, meets wide public acceptance

■ NOW BEING built on the outskirts of Clairton, Pa., is Colonial Village, a development containing an initial group of 300 houses, construction of which is a concrete example of a new approach to the problem of how best to incorporate steel into a house. Although nominally frame structures, each house will average 3¼ tons of steel, the total steel tonnage for this group being estimated at 1000 tons. This is the first of several units planned for the Pittsburgh district.

The new approach seen in the houses at Colonial Village is to use steel only at those points where it is most economical due to lower cost, easier erection or some other particular advantage. Each steel part is considered from this angle. The result is a house designed particularly for the wage earner whose annual income is less than $2500 per year, easily financed on that income, yet containing refinements ordinarily found only in more expensive homes.

Accompanying illustrations show wide range of styling. Public acceptance is indicated by sale of nearly 20 per cent of the houses, sight unseen and only on the basis of sample houses and blueprints. Thus, this development appears to offer one answer to the low cost home problem.

Cost Has been Problem

Heretofore it was accepted that use of steel meant higher material cost, in turn necessitating large quantity manufacture if the venture were to be successful. Also public acceptance of the all-steel house has been somewhat delayed due to the widely encountered belief that such construction was not economical from a maintenance standpoint.

Another factor is the public demand that each house be styled differently from its neighbor. This almost stymies all developments along the lines of automotive production where each item produced is identical. In addition it has been difficult to convince building trade unions to accept the drastic reduction in man hours connected with a

At lower left, a steel foundation cover has welded-on fittings used to locate and fasten wooden uprights. At left, formed steel members with spacers receive wooden joists, add strength and save time. Below, setting a radiator flush in the wall. Note exterior wall insulation

Staircases are prefabricated and installed in houses as finished units

house where most of the work was done in a metal shop on a production basis.

Answers to these problems perhaps can be found in Colonial Village.

With an acute housing shortage in Pittsburgh and vicinity, it early became obvious that something on a fairly large scale was necessary to care for workers required to man the new Irvin works of Carnegie-Illinois Steel Corp. near Clairton. Gilbert-Varker Inc., Boston, New York and Pittsburgh, engineers and architects, began planning a community of homes embodying developments under consideration by this firm for some time. Called engineered architecture, the method followed is similar to ordinary engineering construction in that each operation was studied carefully, all material and each design gone over time and time again to pare down costs and reduce waste. Result is a house design well within the range of large mass buying power and using large quantities of steel as well as other materials. Also, it contains refinements and luxuries heretofore supplied in houses costing much more.

Pennsylvania Housing Corp., Pittsburgh, was formed to build and sell these houses. New York Life Insurance Co., New York, financially backed the project. Federal Housing Authority guarantees all mortgages and sets up terms of payment. Cost of a house is $28 to $35 per month on a unit cost of $3990 to $5310.

Materials for these houses were selected on a competitive basis after exhaustive studies of first cost, maintenance, durability, appearance and serviceability. Steel won out over other materials in many cases, including several unusual applications as will be seen in accompanying illustrations.

Amount of steel going into these homes is comparable to former all-steel houses. Five-room model will use 6000 pounds, while six-room variety requires 7000 pounds. Largest part of this is ordinary low carbon steel, except the insulation which is coated terne, 26 gage. Much enameling sheet also is used and a large portion of the trim is porcelain enameled.

Stairs are formed and welded of 14-gage stock and account for 700 pounds in each house. They are insulated from the rest of the house to insure silent tread without metallic reverberations. Foundation sills are of 10-gage stock and consume 210 pounds in the smaller houses, 230 pounds in the larger. Steel ribbons between the floors also are 10-gage steel.

Wardrobes are formed of 22-gage steel with 20-gage doors and are delivered ready for installation at the building site. Kitchen cabinets and closets are similarly constructed, although of 18 and 20-gage stock. Eight-inch structural I-beams are

Upper view, gutters, cornices and window trim are porcelain enameled in various colors. All windows are steel casement type. Below, front door hood of prefabricated enameled steel sheet slips easily into place. Asbestos shingle exteriors require no painting

used as central supports for the houses. Steel pipe is used in the supporting columns. Heating system and plumbing is flexible copper tubing. Copper was chosen here because the cost of installation and the time required was less than standard pipe.

Porcelain enameled sheet has been used extensively. Shutters, entrance trim, kitchen sink and bathroom fixtures, dados (paneling on lower half of bathroom), cornices and window trim are some of the parts finished in this manner. Practically all steel on the exterior of the house has been porcelain enameled to eliminate maintenance expense. Majority of these parts are formed from 18-gage sheets. Weight of the various parts in the five-room and six-room house, respectively, is shown in an accompanying table.

Housing Shortage Cited

Estimates by the Federal government and by reputable housing authorities have indicated the need for new housing units as a result of destruction, depreciation and population growth is 400,000 units annually, 80 per cent of which lie within the $5000 class. Taking this as a base, and considering that in the past ten years the average construction has been only 60,000 per year, we arrive at an annual figure of 740,000 units. This figure represents the number which must be constructed annually for the next ten years to erase the shortage which now exists. For the purpose of setting the potential market for steel here, suppose each of the 80 per cent required under $5000 carried 3 tons of steel, similar to the Clairton homes. The total steel requirement for each year would then amount to 1,776,000 tons of steel.

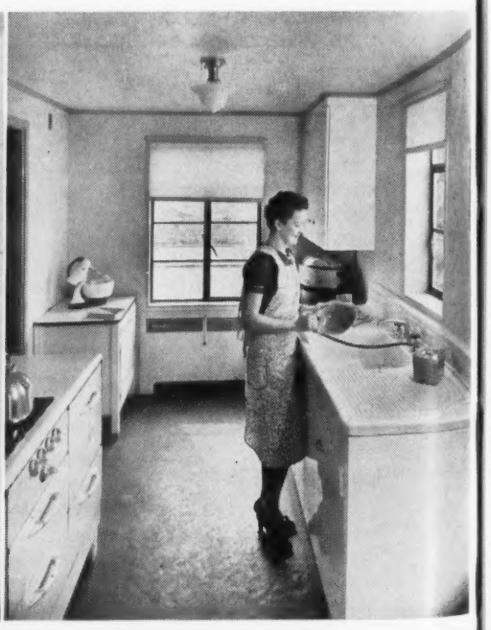
COLONIAL VILLAGE HOMES

Piece	Lbs. Steel Required 5-room	6-room
Stairs	700	700
Foundation sills	210	230
Ribbons	135	190
Door bucks	450	500
Wardrobes	550	825
Kitchen cabinets	700	700
Girders	216	432
Shutters	50	80
Steel columns	70	140
Column caps	5	10
Cornices	190	230
Entrance	75	75
Radiator grilles	30	35
Dado	105	105
Handrails	25	25
Cornerpieces	96	96
Insulation	450	500
Bathtub	150	150
Lavatory	30	30
Molding	180	224
Sink	102	102
Gutters	256	230
Window trim	784	910
Pipe	130	150
Nails, conduit, etc.	300	325
TOTAL	5989	6994

This represents a greater amount than went into the construction of locomotives and other rolling stock for all the railroaods in this country during 1937, one of the best years car shops ever experienced. Its potential is greater than the large home equipment market, including refrigerators, stoves and the like.

Commercial success of home building projects such as Colonial Village, which now seems assured, will be a large factor in opening up this heretofore untapped market for steel.

Left, porcelain enameled sheet covers lower half of bathroom walls while fixtures are enameled pressed steel. Center, wardrobes of steel sheet are completely assembled before delivering and installing in house. Reinforced doorways prevent strains on wardrobe assembly. Right, all kitchen cupboards, the sink and cabinets are pressed steel. Formed steel baseboards and ceiling moldings are used throughout the house



Welded Construction Is Theme of New Volume

■ *Welded Steel Construction*, by Robert S. Hale; cloth, 170 pages, 5¾ x 8½ inches; published by Pitman Publishing Corp., New York; supplied by STEEL, Cleveland, for $3; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

Design, detailing, fabrication and erection of welded steel buildings, bridges and other steel structures form the subject matter of this volume. Need for such a treatise brought about its formulation. Other publications have offered individual chapters on one or more of these phases but none gives the fundamentals of each in brief form, covering progress from the designer's thought to the finished product.

The volume is not a treatise on the welder's art or the science of construction. Its claim to attention lies in the simple, concise exposition for architects, engineers, fabricators, contractors, welders, estimators, students and others who have a general knowledge of plans and structural engineering or welding.

Numerous diagrams and cuts illustrate the text and 24 tables present engineering data.

Redesigns Coal Stokers

Use is made of die castings, welding, special alloys, improved drive, simplified automatic air control and more attractive finish in redesign of these stokers

By J. E. MARTIN
Manager, Stoker division
Caldwell-Moore plant
Link-Belt Co., Chicago

■ AFTER several years of experimentation on automatic coal stokers for residential heating, Link-Belt Co., Chicago, recently decided to effect an almost complete redesign of its product. The new Econo-Matic stoker incorporates not only improvements suggested by laboratory tests but also changes intended to simplify production on a quantity basis. Use of die castings, welding, special alloys, improved drive, simplified automatic air control and more attractive appearance are involved in redesign of the stoker.

Essentially unit consists of four principal parts: Hopper; drive mechanism for screw and fan; hopper bottom with feeding screw and ducts for coal and air; burning head. The hopper, drive and hopper bottom first are assembled as separate units and then are built into and crated as a single complete unit ready for shipment and installation. The burning head also is assembled and crated complete. Due to varying length of feeding screw, air and coal conveyor ducts and feed screw are packaged separately.

When installed, these three unit parts are assembled, stoker is tested and then is ready to operate. Subdivision permits easier storage and shipping, and units occupy less space than assembled stoker.

In providing protection against overloads, change was made from mechanical to electrical means. Overload protection against either stalling motor or a heavy overload causing motor to heat is obtained through thermal overload relay which cuts off power. This cutoff is automatic, but permits motor to continue operation under short-lived overloads.

An obstruction removal section is placed in the cast-iron hopper bottom but outside hopper at point where feed screw enters tube for conducting coal from hopper to burner. Section may be opened and screw cleaned out by loosening two thumb nuts opening or disconnecting hopper.

"Backbone" Strengthens Unit

Another feature in redesign is straightening of stoker by provision of a backbone. Instead of attaching drive, fan and gear case to sheet steel hopper, these are mounted on the heavy cast iron hopper bottom, which absorbs and deadens vibration. This construction is shown in Fig. 1. Hopper is constructed entirely separate from the drive and is slipped over and bolted to this main casting.

Elements of stoker are brought to assembly conveyor fully machined and in most cases in unit assemblies, so that final assembly consists only in bolting these parts together. First step is to bolt cast iron hopper bottom or backbone to bottom of crate. This backbone serves as a chassis to which other parts are fastened. Feed screw operates in bottom of this trough and a cored air duct on one side carries air from fan.

To this hopper bottom is bolted preassembled and tested gear case which contains a worm gear driven from motor by a V-belt. An eccentric on the worm gear drives a ratchet mounted on a semicircular ratchet lever arm forging. Lever carries a pawl which meshes into a bronze-aluminum ratchet wheel cast in a

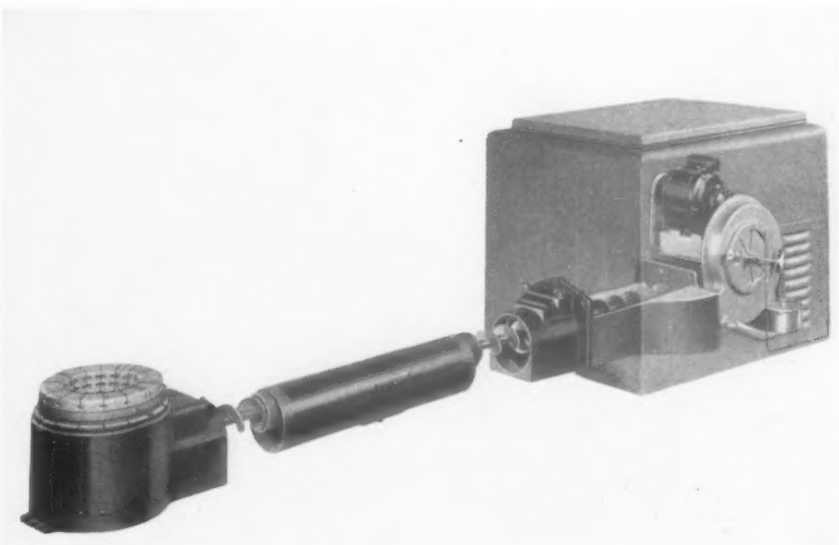


Fig. 1—Phantom view of working parts of stoker with coal and air ducts cut away to show arrangement and feed screw

permanent mold on premachined steel shaft with squared end for driving coal feeding screw.

Speed adjustment of feed is made from outside by shifting a dial to change span of engagement of the pawl, to include more or fewer teeth. Gear case is a two-piece zinc alloy die casting with shaft for ratchet lever cast in. Only machining required is to bore and ream openings for other shaft bearings. Four bolts hold reduction gear unit to hopper bottom casting. Motor and fan are mounted on gear reduction unit so that by loosening bolts entire drive mechanism may be taken out for servicing.

Fan consists of a zinc alloy die-cast and balanced sirroco type fan and shutters mounted in a housing formed by two steel stampings. Required air supply is controlled automatically by varying inlet. This method is said to reduce power consumption, as it is seldom fan must operate at full pressure with inlet control. Despite changes in load or speed of stoker, air-meter will function automatically to provide most efficient ratio of air to coal. Air supply is introduced through louvers in side of hopper.

Motor Is Rubber Mounted

Instead of mounting motor directly on gear case, bearing housings on end bells are rubber mounted in the motor base stamping, as seen in Fig. 2. To provide belt take-up motor base is fastened to a stamped base attached to gear case. One end of motor may be raised or lowered by adjusting two nuts.

When complete drive mechanism is assembled on cast-iron hopper bottom or backbone, entire assembly is checked by an inspector. Assembly then passes on to paint spray booth. Here a hood is slipped down over motor to protect it while entire hopper and driving mechanism inside hopper are

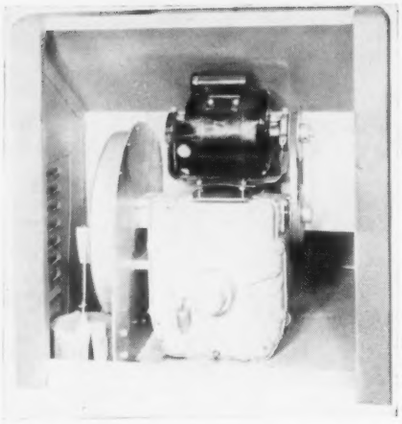


Fig. 2—Vibration from motor is absorbed by mounting in a rubber-insulated yoke. Adjustable base simplifies changing or tightening V-belt

sprayed with aluminum paint. Another guard is slipped on while shoulder to which hopper is bolted and short section of backbone containing cleanout opening are sprayed with gray paint.

At the next assembly station the hopper, which has been fabricated of cold-rolled, copper-bearing, corrosion-resistant steel, is set over the backbone and drive mechanism and bolted down. Hopper consists of three sides, a hinged cover and a removable door, the cover and door forming a decorative panel. Hinged top rests on a rubber cushion to make it safe and dust-tight.

After complete unit is assembled and inspected, a paper bag is drawn over hopper and a box crate set down over top and nailed to bottom of crate on which assembly was started. Complete hopper and drive then are trucked to storage or for shipment.

Burning head is assembled and crated separately. It consists of a one-piece cored iron casting for wind box and retort and the sectional chromium silicon tuyere castings. When redesigned, shape of inside of retort was changed to improve fuel bed distribution and eliminate any possibility of fuel packing.

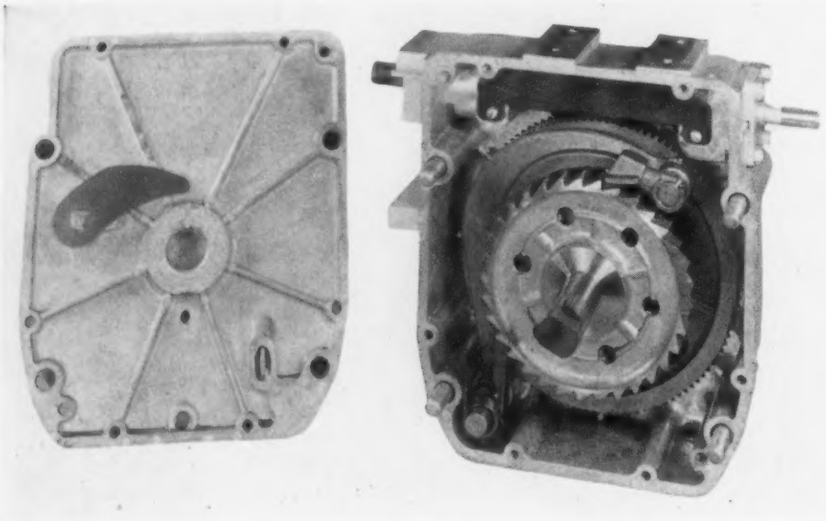
Tuyeres Have Small Sections

Making tuyeres of small sections instead of larger castings is somewhat more expensive but has eliminated any trouble from cracking due to unequal expansion or shrinkage strains. Castings contain 0.40 per cent chromium and 2 to 3 per cent silicon and are of two types for different kinds of coal. When assembled castings are fastened together with a steel strap.

Three parts remain: Air and coal ducts and the feed screw, which convey air and coal from hopper and fan to burning head. In this unit coal feed screw conveys through a 3-inch duct of electrically welded tubing. Cast steel coal feeding screw is 2¾ inches in diameter with a variable pitch designed to provide improved distribution of coal. This screw is hardened all over with end near fire zone made extra hard.

Screw, air and coal ducts are of various lengths to take care of installation problems. These are crated as separate units so that entire stoker may be assembled from three stock items to meet any requirement of type of coal and distance from hopper to furnace.

Fig. 3—Gear reduction unit and driving mechanism are strong enough for any motor load, permitting use of electrical overload control instead of shear pin



♦

Third British Report on Steel Castings Issued

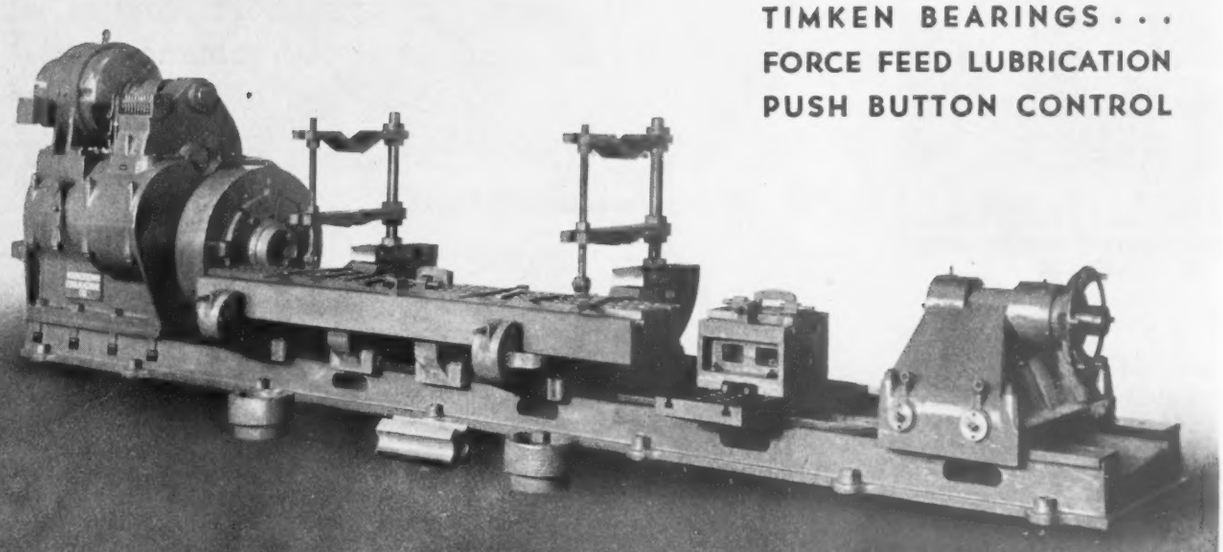
■ *Third Report of Steel Castings Research Committee;* cloth, 294 pages, 5¼ x 8½ inches; published by British Iron and Steel institute; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W.1.

This is a report by a joint committee of the Iron and Steel institute and the British Iron and Steel federation to the Iron and Steel Industrial Research council. It is printed by the institute as special report No. 23. The second report was issued in 1936.

Included in the third report are: Fluidity of iron-carbon and other iron alloys; copper-steel castings; strength and ductility of cast steel during cooling from the liquid state in sand molds; first report of the molding materials subcommittee; bibliography on manufacture, properties and testing of steel castings.

MODERN • • • ROLL TURNING LATHES

TIMKEN BEARINGS . . .
FORCE FEED LUBRICATION
PUSH BUTTON CONTROL



Complete Equipment
for the finishing end of
Strip Mills . . Tin Mills
. . Sheet Mills . . Scrubbers
. . Dryers . . Oilers . .
Processing Machines
. . Stretcher Levelers . .
Special Machinery

IRON AND ALLOY-IRON ROLLS

•

IRON CASTINGS UP TO 100,000 POUNDS

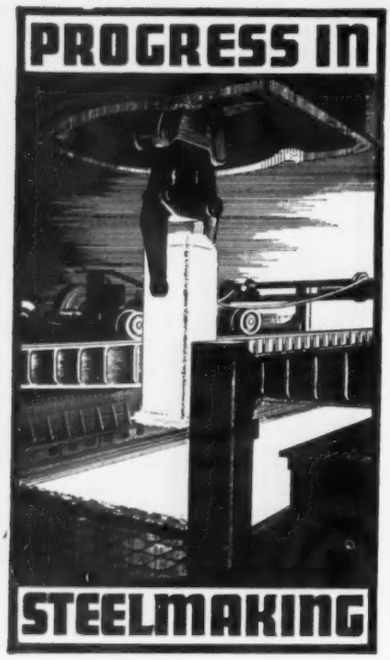
•

"PARALLOY" our own development . . . gives high strength responses in heat treatment

The Youngstown Foundry & Machine Co.

Youngstown • Ohio

ESTABLISHED 1886



Teeming Temperatures

Use of the optical pyrometer as a control instrument to aid in improving open-hearth practice is recommended and details of the procedure involved are given

By ERWIN H. WALDMAN
Andrews Steel Co.
Newport, Ky.

■ IN APPLYING modern scientific instruments and methods to steel mill practice, two things stand out: The desire to directly relate science to practice, and to maintain perfection when reached. Accordingly, the following method of open-hearth tapping temperature and teeming temperature control will be basically suggestive.

The pyrometer should be used to achieve a certain definite objective rather than as a checking instrument, especially on the open hearth. As the melter foreman carries the major part of the responsibility of making a heat, he should logically be the man to use the pyrometer.

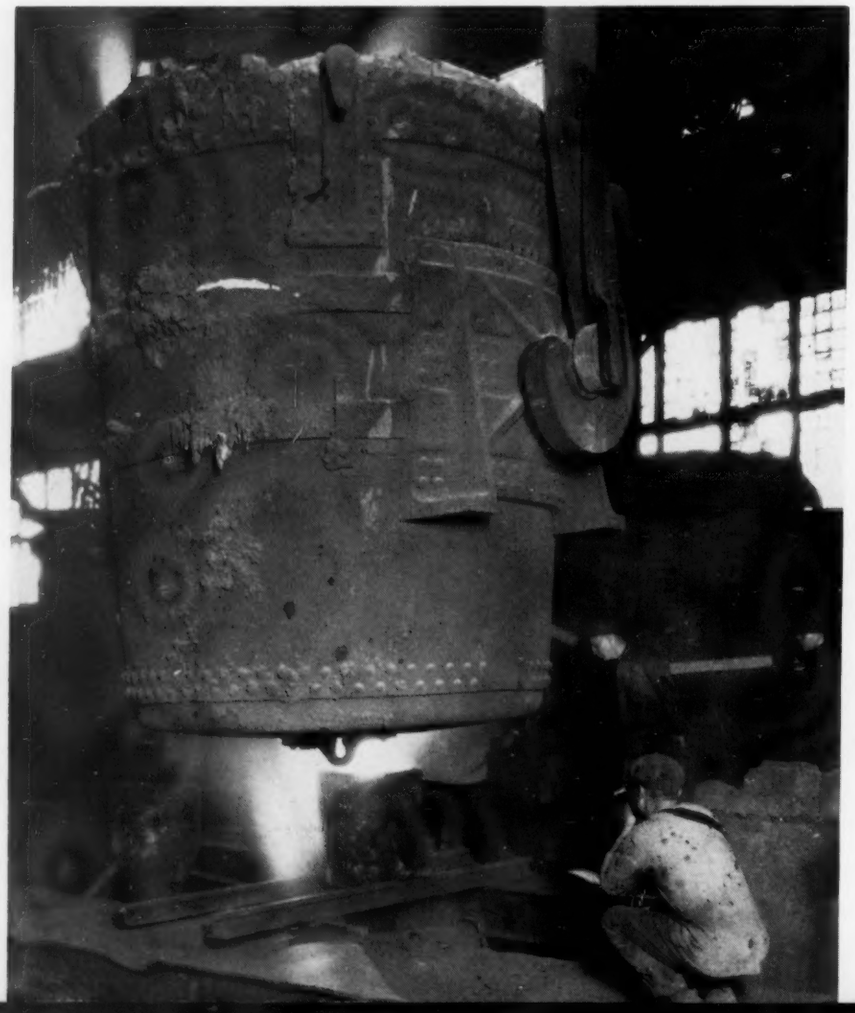
For this purpose, an optical pyrometer, disappearing filament type, should be used. It should be compact and its interpretive recording indicators should read in degrees Fahr.

When a heat is ready to tap, the melter foreman should satisfy himself as to the proper temperature by the usual methods such as shaking a low carbon rod in the bath for approximately one minute and observing the action of the bath on the end of the rod, and by having the first helper pour a test spoon full of steel on the floor to observe the fluidity and skull. Then, if the heat has been found ready to tap, the pyrometer should be used.

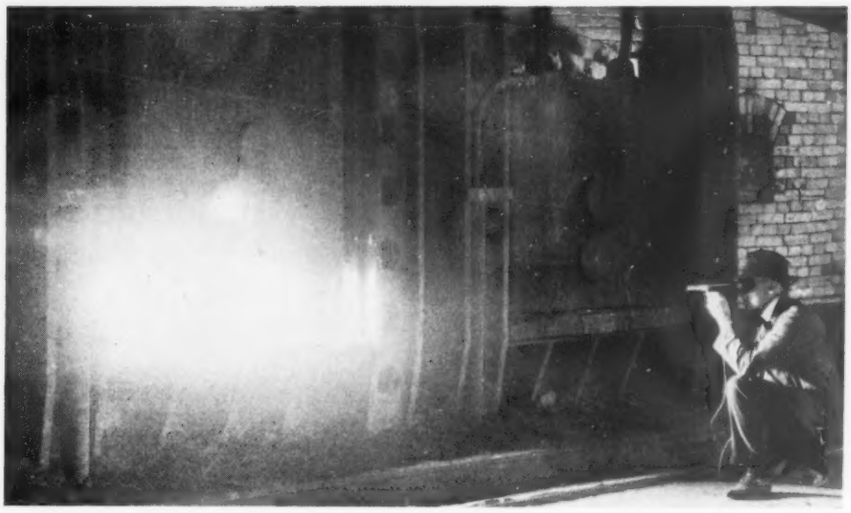
The first reading should be taken of another test spoon full of steel dipped from the bath area around the middle door, not withdrawn from the furnace but drawn forward to a point above the breast wall and slightly tilted so its contents can be focused through the pyrometer held at the peep hole at a distance of about six feet.

In the same manner, a reading should be taken of the slag and both readings recorded.

Before these tests are made for temperature, all additions to be made in the furnace should be completed. The practice of adding the "recarb" while the heat is going down the runner should, of course, be abandoned in any event. Temperature readings of test should be taken inside of furnace because



Measuring the teeming temperature with an optical pyrometer



Taking a slag temperature in open hearth. Photos courtesy Leeds & Northrup Co., Philadelphia

there is little tendency for manganese fumes and other gases to cloud about the spoon and cause an inaccurate reading such as would be the case if test spoon full of steel were withdrawn from the furnace.

Next step in calibration may aptly be called relative calibration in that the next two readings will be dependent upon and relative to the reading taken of the bath in the furnace with the addition of the time element. Also a reading should be taken of the heat as it flows down the runner into the ladle with the pyrometer held at a convenient distance and focused on the steel stream at some point between the end of the runner and the ladle. Reading should be recorded.

After quality and depth of slag blanket has been noted, together with the time between tapping and teeming time, the next reading should be taken of the steel stream as the third ingot is being poured. The reading is taken from a squatting position to the right or left of the steel pourer and recorded. The melter will carefully note the pouring practice and the ladle skull.

Readings Noted

If the furnace conditions and teeming practice have been normal, the melter will note the temperature reading of the bath and teeming temperature in degrees Fahr. in the open-hearth book, together with the notation that the open-hearth practice has been normal. The metallurgical department, having followed the heat through to its last operation and tested the heat for chemical and physical quality and found the heat has measured up to specifications and expectations, will consider the two readings in the open-hearth book as tapping temperature data and teeming temperature data which will be contributing factors from which standard tapping and teeming temperatures will be figured and selected.

To secure standard tapping and teeming temperatures for every type and classification of steel made, at least 20 data temperatures should be secured in the manner described, for each and every type of steel made. To determine whether to assign the same standard tapping and teeming temperature for a certain type of steel to all the melters it may be advisable to have each melter secure his own 20 data temperature figures for each and every kind of steel he is making. Thus for every kind of iron and steel made by his shop, the metallurgist would have from 60 to 80 calibrated and relatively calibrated temperature figures per kind of steel to study, and may assign a different standard temperature to each melter per kind of steel.

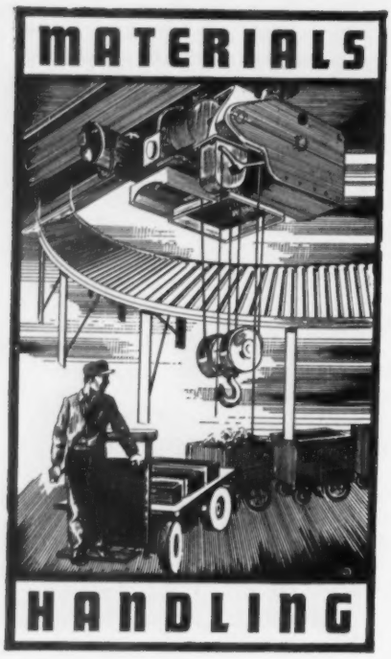
From this point on, efforts may be directed toward "maintaining perfection."

A melter has a definite tapping temperature to work toward, for each and every kind of steel he has to make and an accurate tool to help him to arrive at it. Old methods may be completely abandoned. Teeming temperatures which are most important in determining the quality of a heat of steel can be controlled in every case except where a heat for some reason or other has been tapped too cold.

Experience will give a melter a sense of proportion and relationship as he considers the additions in the ladle in light of their endothermic or exothermic character, the quality and depth of the blanket of slag, the temperature he tapped on, the temperature of the steel as it flows into the ladle and the time the heat should be held in the ladle until the proper teeming temperature has been reached.

Using the pyrometer as a tool in making steel on the open hearth will insure continuity of quality and uniformity, insofar as the temperature factor is concerned, not possible before. Thus the tapping of heats by the pyrometer may point the way toward further and broader fields of research. This might possibly lead to simpler classification of steels with respect to temperature.

Here temperature of steel as it flows down the runner is being measured



Mechanical Charging

Use of completely mechanized yard handling and cupola charging operations eliminates much heavy work, increases speed of operations and aids control of charging details

■ RECENTLY Ferro Machine & Foundry Co., Cleveland, desired to increase the speed of cupola charging operations at its plant. Also it was deemed advantageous to mechanize the yard handling and storing of raw material for the cupola. The installation of complete mechanical handling system now greatly aids charging operations and has eliminated considerable labor formerly connected with this work.

Raw material arrives on a railroad spur extending into the storage area. Over this entire area, a wide span crane of 5-ton capacity operates as shown in Fig. 1. Crane runway is built of heavy vertical supporting beams which are tied together and reinforced by an overhead structural framework of lighter steel members. This crane is equipped with an electric magnet which facilitates loading and unloading of scrap metal.

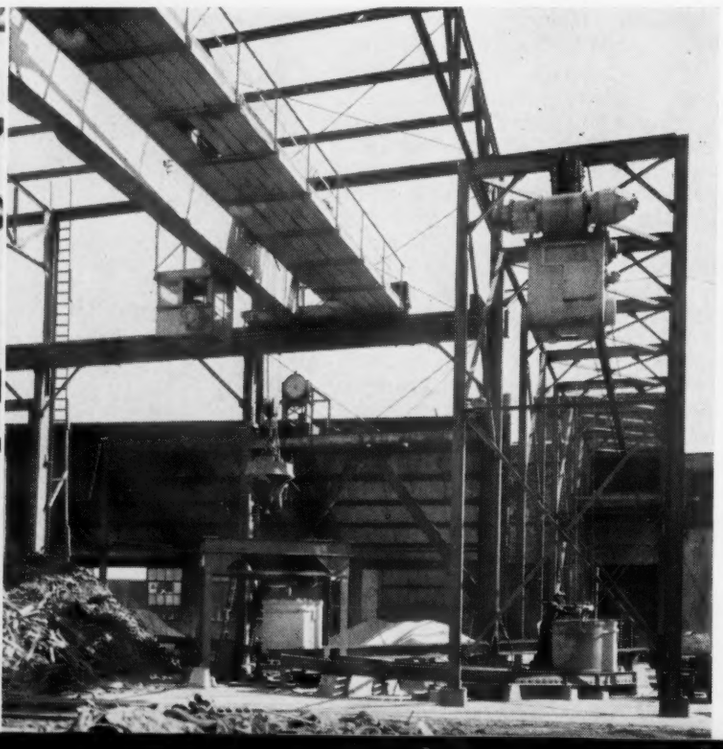
Crane cab is suspended from the crane bridge and is fastened to the hoisting mechanism structure so the cab moves back and forth along the length of the bridge with the hoist, providing the operator with a close view of operations at all times. Cab is enclosed type to assure comfortable quarters in all kinds of weather.

On the lower side of the crane bridge, four large electric lamps are placed in high-bay type reflectors to furnish yard illumination for night operations. Being fastened to the crane bridge, they move up and down the crane runway to supply light over the area where loading or unloading operations may be in progress.

The traveling crane loads scrap into the charging bucket as shown in Fig. 2. This bucket is located on a scale so the charge can be weighed accurately. Over the scale and charging bucket a funnel-like structure, or hopper, is permanently

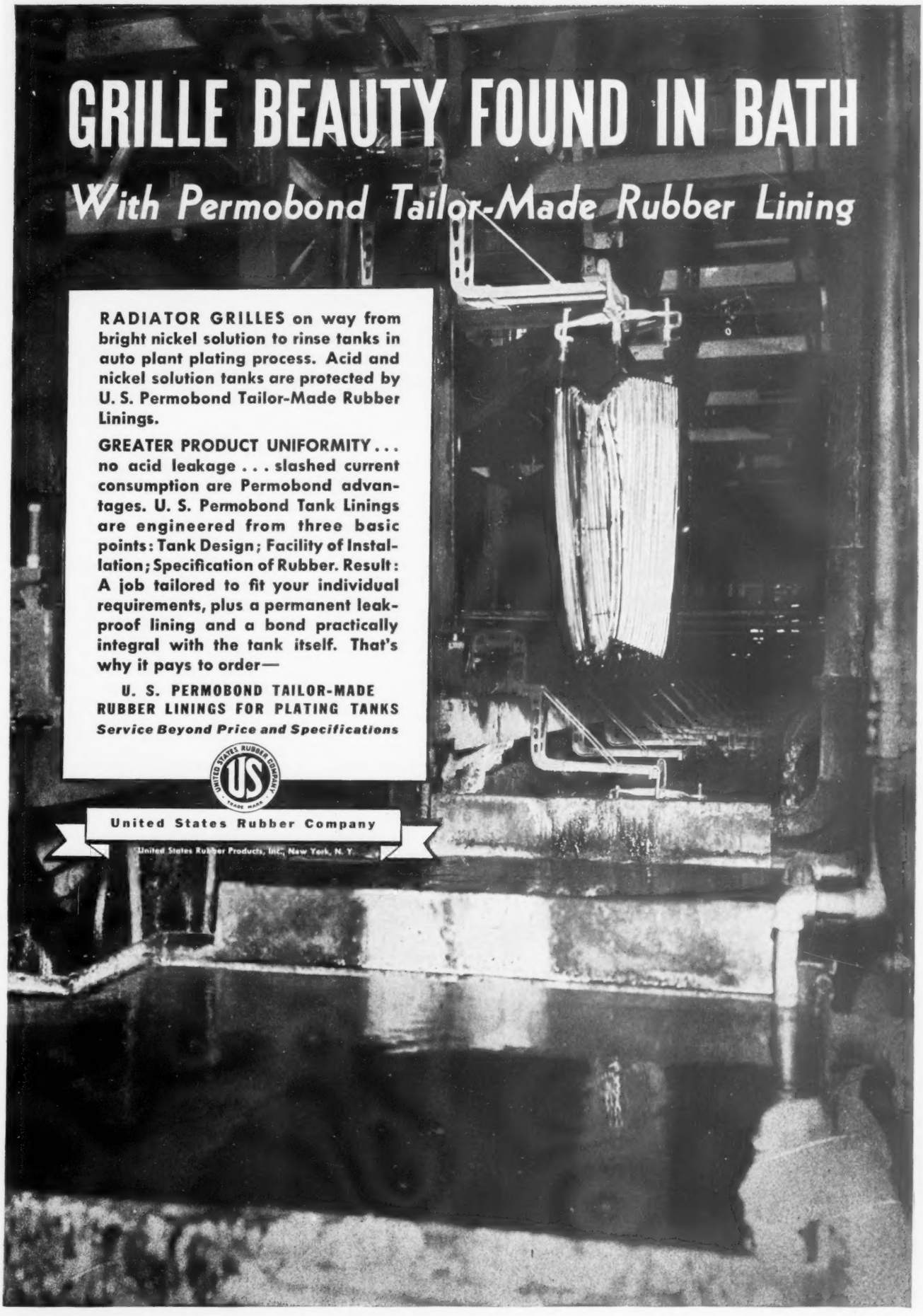
Fig. 1—Yard area effectively covered by crane. Photos courtesy Shepard Niles Crane & Hoist Corp.

Fig. 2—Loading scrap into charging bucket with aid of electric magnet and hopper



GRILLE BEAUTY FOUND IN BATH

With Permobond Tailor-Made Rubber Lining



RADIATOR GRILLES on way from bright nickel solution to rinse tanks in auto plant plating process. Acid and nickel solution tanks are protected by U. S. Permobond Tailor-Made Rubber Linings.

GREATER PRODUCT UNIFORMITY... no acid leakage . . . slashed current consumption are Permobond advantages. U. S. Permobond Tank Linings are engineered from three basic points: Tank Design; Facility of Installation; Specification of Rubber. Result: A job tailored to fit your individual requirements, plus a permanent leakproof lining and a bond practically integral with the tank itself. That's why it pays to order—

U. S. PERMOBOND TAILOR-MADE RUBBER LININGS FOR PLATING TANKS

Service Beyond Price and Specifications

United States Rubber Company

United States Rubber Products, Inc., New York, N. Y.

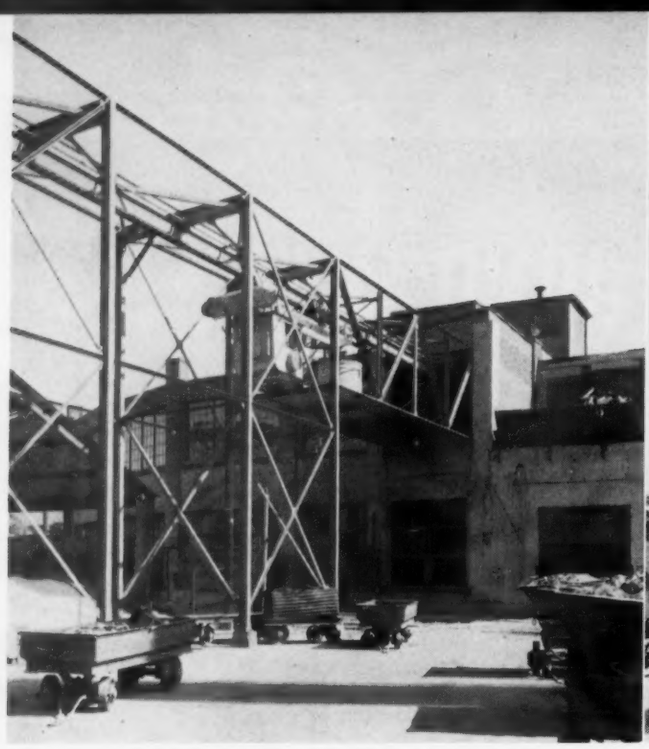


Fig. 3—Loaded charging bucket on way to cupola carried by monorail hoist

Fig. 4—Monorail tractor and hoist unit carrying loaded bucket over area protected by apron

mounted to protect the scale mechanism and adjacent equipment from stray pieces of falling scrap during the loading operations.

After the charge has been made up, the operator manipulates air valves which set the bucket in motion on a gravity roller type conveyor seen in Fig. 2. This conveyor delivers the loaded bucket underneath a monorail line. Here a hoist picks up the bucket and carries it into the foundry to the charging floor as shown in Figs. 3 and 4.

Where the monorail line passes over a railroad siding alongside the building, a heavy steel apron is mounted just low enough to clear the monorail carrier and bucket. See Fig. 4. This prevents any stray pieces from dropping onto cars or people below. As is evident in Figs. 3 and 4, the monorail line is supported by a substantial framework and amply crossbraced to prevent any weaving. Legs for this structure, as well as those for the traveling crane, are mounted on concrete piers or footings.

The monorail with two 3-ton charging cranes serves the cupolas. One charging crane handles the metal charge and the other carries the coke. The first charging crane picks up the bucket holding the metal charge which has been deposited underneath the monorail by the roller conveyor. Then it travels into the cupola. In the meantime, the other charging crane picks up the coke charge.

Upon entering the cupola charging room with the charging crane, the operator carefully positions the bucket in the cupola as shown in Fig. 5, and lowers the bucket within a few feet of the bed. Then he pulls a cable which releases the hinged halves of the bucket bottom, permitting the bucket contents to be discharged into the cupola.

After discharging, the bucket is raised to the position shown in Fig. 5 and lowered out onto the charging

(*Please turn to Page* 67)

Fig. 5—Removing discharged bucket from cupola. Workmen need get no closer than this

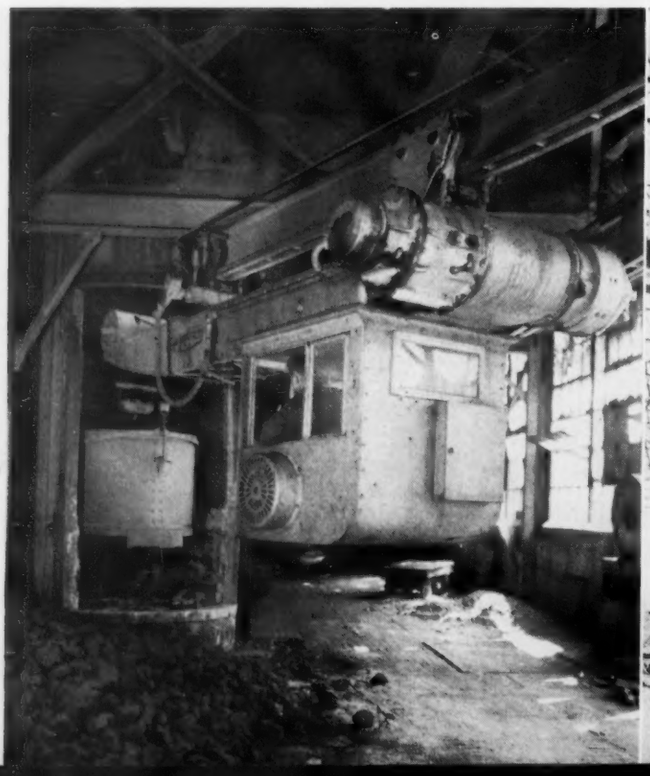
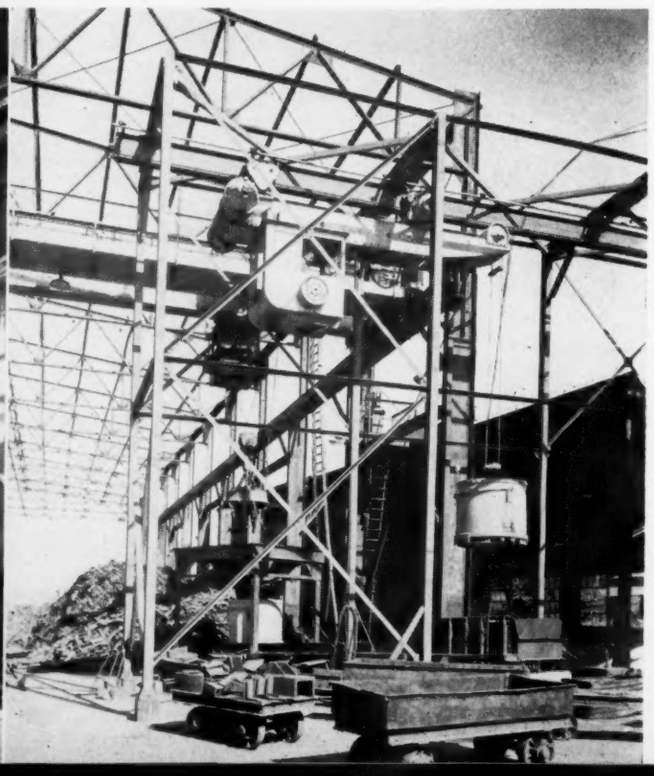


Fig. 6—Empty bucket being lowered to roller conveyor which will carry it under loading hopper



British Institutes Hold Canceled United States Meetings in London

■ PAPERS and reports which were to have been presented at the joint meeting of the Iron and Steel institute and Institute of Metals, of Great Britain, with the American Iron and Steel institute and American Institute of Mining and Metallurgical Engineers in New York early in October were read at separate meetings of the two British organizations in London, Oct. 26 and 27. The unsettled international situation had forced cancellation of the meeting in the United States.

One feature of the Iron and Steel institute program was release of the "Third Report of the Steel Castings Research Committee." This was the work of a joint committee of the institute and British Iron and Steel Federation. The second report of the group was issued in 1936. W. J. Dawson, Hadfield's Ltd., Sheffield, chairman of the committee, announced that a new foundry practice subcommittee has been established to devote its attention to scientific study of matters relating to actual production of castings.

Compare Practices

Technical papers written by British and American experts and read at the meeting provided excellent comparisons of steelmaking practice in the two countries.

Among papers prepared by Americans was one on "American Electric Furnace Practice," by W. M. Farnsworth, and E. R. Johnson, superintendent, electric furnace department, and assistant chief metallurgist, respectively, Republic Steel Corp., Massillon, O. The authors described arc and low-frequency furnaces in their plant and dealt with practice in the manufacture of alloy and stainless steels.

Modern European practice with arc and high-frequency furnaces was the subject of a paper by D. F. Campbell, consulting engineer, London. Recent methods of rapid deoxidation and refining by agitation of the steel with suitable slags were discussed, as well as the possibility of using the heat and movement obtained by induction heating for refining purposes.

Dr. C. Sykes and H. Evans, Trafford Park, Manchester, described a research on specific heat-temperature curves of commercially pure iron and certain plain carbon steels. The authors made measurements of the specific heat in the temperature range of 80-450 degrees Cent. on a number of samples of the two classes of materials. Results were in reasonable agreement with accepted values.

Two papers on rolling mill practice in America were read, one contributed by Quincy Bent, vice president, Bethlehem Steel Co., Bethlehem, Pa., and the other by D. Eppelsheimer, vice president, American Rolling Mill Co., Middletown, O. The former dealt with mills exclusive of continuous strip and sheet mills and the latter with continuous strip mills.

Heating a Science

Mr. Bent called attention to the fact that the heating of steel ingots and semifinished products in the rolling operation is reduced to a definite science; studies of the most adaptable types of heating furnaces and suitable fuels are being made constantly. Application of instruments to control atmospheric conditions and temperature of furnace now is general practice. Contributing largely to recent improvements and successful operation of rolling mill machinery has been development of the electric motor and its control for driving mill stands, Mr. Bent stated.

Mr. Eppelsheimer described the device which is used for recording the variations of sheet cross-section with magnification by electrical means. Continuous mills, he said, are producing what amounts to a new product in the way of wider, longer and more uniform sheets of improved surface and physical characteristics. He commented on the fact that relative productiveness of these mills requires intelligent control of the instrumentality to prevent dislocation of labor and injury to the sheet trade.

A number of other papers prepared by British and American authors were presented but not discussed. Among American authors was Edgar C. Bain, assistant to vice president in charge of research, United States Steel Corp., Pittsburgh, whose contribution, "Grain Size and Hardenability in Steels To Be Heat Treated," developed quantitative evidence of the degree to which increasing grain size in a hardenable steel of given composition increases the hardenability and similarly indicates the degree of the superiority with respect to toughness or impact strength of the heat treated steel of fine austenitic grain. These effects were shown to exist whether the grain size disparity is brought about by heating schedules applied to the same steel or by inducing different grain-growth response by the final treatment of the molten steel.

Titles of other American papers were: "American Soaking Pit and Reheating Furnace Design and Practice," by Frederick M. Gillies and Edwin D. Martin, Inland Steel Co., East Chicago Ind.; "Factors Affecting Red Shortness," by Frank G. Norris, Steubenville, O.; "Development of the Open-Hearth Steelmaking Processes in Recent Years in the United States," by L. F. Reinartz, American Rolling Mill Co., Middletown, O.; "Conversion of Solid Cementite Into Iron and Graphite," by H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland; "Recent Developments in the American Iron and Steel Industry," by Clyde E. Williams, Battelle Memorial Institute, Columbus, O.; and "Manufacture of Seamless Steel Pipe in Plants of the National Tube Co.," by Edwin C. Wright and Stevenson Findlater, National Tube Co., Pittsburgh.

Titles of British papers were: "Quench Ageing of Steel," by Prof. J. H. Andrew and Dr. E. M. Trent, Sheffield University, Sheffield; "Precipitation Hardening in Three Steels Containing Vanadium," by H. H. Burton and T. F. Russell, Sheffield; and "Cold Deformation and Recrystallization of Metal Crystals, with Particular Reference to Alpha Iron," by Dr. J. W. Rodgers, Sheffield University, Sheffield.

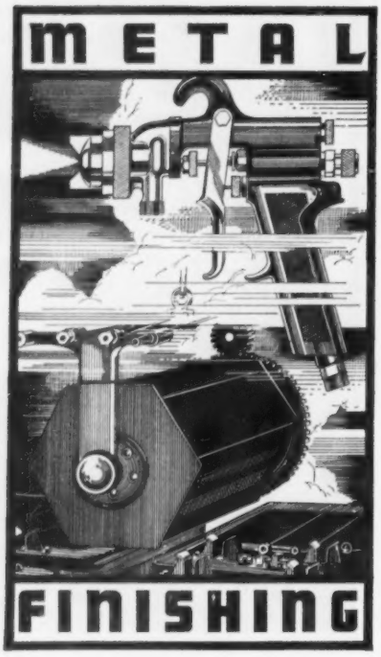
Castings Report Subdivided

The report on steel castings research was divided into six sections. Section I was the introduction. Section II dealt with the fluidity of iron-carbon and other iron alloys. This was divided into two parts; Part A discussing the fluidity of alloy steels and Part B the Ruff fluidity test. Section III dealt with copper-steel castings; Section IV with strength and ductility of cast steel during cooling from the liquid state in sand molds. Section V comprised the first report of the molding materials subcommittee; and Section VI was a bibliography on the manufacture, properties and testing of steel castings (not including molding sands).

General presentation of the report was made by Mr. Dawson, chairman of the sponsoring committee, and this was followed by extensive discussion of Section V on molding materials by W. J. Rees, University of Sheffield, Sheffield, chairman of the subcommittee. Members of the Institute of British Foundrymen participated in the general discussion.

J. G. Pearce, director, British Cast Iron Research association, empha-

(*Please turn to Page* 65)



Paint Progress

In presenting this review of paint developments, a wide field of activity is covered. Various combinations of special value are pointed out

By **BENJAMIN JOACHIM**
President
Joachim Research Laboratories Inc.
Brooklyn, N. Y.

■ IN THE PAST few years many ideas regarding paint and varnish materials have been radically changed, especially in connection with coatings for metal surfaces.

Eagle-Picher Lead Co., Cincinnati, contributed much toward rust-proofing of structural steel in its study of "Fighting Rust with Sublimed Blue Lead." To prevent rusting of steel, it is necessary to exclude water and oxygen from the surface. Since the perfect exclusion of water and oxygen is impossible from a practical standpoint, by selecting the proper basis pigment, corrosion may be inhibited. Among the basic pigments, red lead, basic chromate of lead and sublimed blue lead have shown excellent rust-inhibiting properties. Sublimed blue lead has been used successfully when combined with the proper vehicle as an economical rust-inhibiting pigment.

New Pigment Introduced

While sublime blue lead, red lead and basic lead chromates are comparatively old pigments, within the past few years a product known as "Metalead" has been introduced. This is a malleable pure lead pigment which is given "leafing" properties similar to the modern aluminum pastes. It is produced from regular desilverized pig lead which is first atomized into a fine powder and then leafed in a manner similar to the manufacture of aluminum paste. Metalead first found acceptance for interior mining conditions because of its high resistance to sulphur dioxide fumes, to acids and alkalies.

Other metallic pigments include gold bronze, aluminum bronze and zinc dust. Aluminum bronze and zinc dust play an important part in the coating of steel. The value of aluminum metal properly treated to produce "leafing" has been widely accepted as a pigment for finishing coats of metal surfaces. Use of aluminum pastes in place of powder has enabled the user to obtain smoother and brighter finishes when used alone or in combination with other pigments. The "flaking" action of aluminum metal produces a film which is outstanding in its resistance to moisture and ultra-violet rays of the sun. Over a properly primed steel surface, two coats of aluminum paint have produced a durable light colored attractive surface quite suitable for bridges, pipe lines, fire hydrants, etc. Aluminum pastes have been introduced by Aluminum Co. of America, Pittsburgh, and C. J. Osborn Co., B. F. Drakenfeld & Co., U. S. Bronze Powder Works Inc., all of New York and Reynolds Metals Co. Inc., these latter Richmond, Va.

Zinc dust or metallic zinc powder has shown excellent rust inhibitive properties on iron and steel. It also adheres well to galvanized metal, zinc and other nonferrous surfaces. The New Jersey Zinc Co. New York, has done intensive research on the use of zinc powder as a rust-inhibitive pigment in a metal primer.

All the previous pigments are distinctly insoluble in water. The use of a pigment slightly soluble in water is a radical step in the formulation of paints for steel. Zinc chromate due to its slight water solubility exhibits excellent rust-inhibitive properties. Realizing that it is practically impossible to exclude all oxygen or water on the surface of the metal before or after painting, introduction of zinc chromate has been adopted as a rust-inhibitive. Along with this type of material, diatomaceous earths such as Dicalite or Celite have proved valuable in primers.

Some users of paints, particularly oil refiners, still prefer magnetic black oxide of iron such as "Oneida" of C. J. Osborn Co., New York, in combination with other pigments.

In discussing the value of pigments as rust inhibitors, combinations of red lead or blue lead together with diatomaceous silica such as Dicalite with a very active rust inhibitor such as zinc chromate appear to produce good results from the pigment standpoint.

However, selection of the proper vehicle is of utmost importance. In choosing the vehicle, careful consideration must be given to its moisture and alkali resistance. This latter requirement excludes the use of raw or boiled linseed oil.

Must Keep Metal Dry

Dry metal does not rust. Therefore, it is important to choose a film which will keep as much moisture away from the metal as is physically possible. The dried film of a good vehicle should withstand boiling water for over 7 hours without blistering, turning white, dulling, softening, or showing any other visible defect. Still, while one can obtain maximum resistance to moisture or porosity to water, nevertheless it appears physically impossible to prevent some moisture from being retained on the surface of the metal or absorbed through the film.

In the rusting of iron, hydroxyl or

WHY *Stromberg-Carlson* uses ORTHOSIL

TRADE MARK

FOR METAL CLEANING

Particularly effective in electrolytic cleaning due to its high conductivity.
Assures quicker action than other alkalis.
Prevents grease and dirt from re-depositing.
Easy to pour, quick to dissolve.
Dry — highly concentrated — economical.
Quickly removes the grease, soot, dust and various other kinds of dirt unaffected by pickling acid.
Leaves material clean for further processing.

"There is Nothing Finer Than a Stromberg-Carlson"—this well-known slogan reflects the high standards of the Stromberg-Carlson Telephone Manufacturing Company. Many of the metal parts that go into all of the radio sets and most of the telephones made by this company are cleaned in Orthosil solutions prior to the finishing operations.

Orthosil finds its natural place in this exacting service because of its remarkable speed and effectiveness in cutting through grease and dirt. It lays clean the metal underneath, ready for further processing. Prevents grease and dirt from re-depositing. Saves money as well as time. For Stromberg-Carlson, Orthosil has cut the cost of alkaline metal cleaning by fully 50%.

Orthosil is easy to handle, convenient to store. Try Orthosil—check it against other alkalis. Why not write now for full details? Address Department F.

PENNSYLVANIA SALT MANUFACTURING CO. · Est. 1850
WIDENER BLDG., PHILADELPHIA, PA.
NEW YORK · CHICAGO · ST. LOUIS · PITTSBURGH · TACOMA · WYANDOTTE

PENNSYLVANIA SALT *Chemicals*

STEEL's 1939 Yearbook Issue

will be waiting for you on the first working day of the new year. It will give you a concise history of business in 1938 which will help to chart your course in 1939. It will contain interpretive articles of vital interest to management, complete market summaries, engineering progress, the Business Trend and other features of proven value.

The January 2, 1939 Yearbook issue will be a thoroughly dependable reference volume; even surpassing the 1938 Yearbook issue which brought forth many comments such as the following:

> ". . . this issue has just come to hand and I want to congratulate you on its setup and its very fine appearance. I am satisfied that it contains a great deal of valuable information and will be a number that will find favor with the readers in no uncertain terms. It is something that you can take real pride in."
>
> ". . . I wish to take this opportunity of complimenting you and your staff for the fine work that you have done in compiling the Yearbook for 1938. You have included a great deal of data which if properly read should greatly assist manufacturers in their business developments for this year."
>
> ". . . the magazine STEEL comes to my desk regularly, but because of its circulation through our company I cannot keep it. I would like you to send me an extra copy of the Yearbook so that I may have it for my own library."
>
> ". . . from an advertiser's standpoint, we consider the Yearbook an essential part of our advertising schedule."
>
> ". . . after carefully reading your 1938 Yearbook of Industry we sincerely believe this issue to be outstanding in all respects. We are looking forward to your continued progress in producing such a noteworthy publication."
>
> ". . . the first opportunity the writer had of seeing your Yearbook issue was this morning, and I have not as yet been able to go through it in detail. However, I will say that after a brief comparison with the yearly issue of a similar magazine, I am of the opinion that the annual issue of STEEL is the best of any publication of its kind that has as yet come to the writer's desk, and you are to be congratulated most heartily."

Advertising in the January 2, 1939 Yearbook issue will be particularly valuable, both from the standpoint of immediate attention and frequent reference. For further information write STEEL, Penton Bldg., Cleveland.

alkaline radicals are liberated to produce an alkaline condition directly under the paint film. Therefore it is important that the vehicle be designed to produce a film of maximum alkali resistance. The dried film should resist a 5 per cent sodium hydroxide solution for 24 to 48 hours without showing any visible effect on the film. If it does not, its use will result in blistering and rusting beneath the film surface.

Zinc Chromate Added

The basic pigments have shown anti-corrosive properties. However, the incorporation of zinc chromate as part of the pigment combination in a vehicle which produces a film of high water and alkali resistance also has shown excellent results. Bakelite Corp. New York, has done extensive research along these lines. The 100 per cent "phenolic" synthetics as represented by Bakelite "254" have made possible finishes of exceptional resistance to moisture and alkali.

As part of the vehicle, the use of China wood oil (tung oil) and its newer companion, Oiticica oil, besides all the recent developments in the field of thinners and driers, is important. Introduction of Nuodex driers using naphthenic acid as a base has aided the control of products used in the coating field. For air dry and baked coatings, an entirely new series of synthetics was introduced including the alkyds (glycerol-phthalates) of Du Pont de Nemours Co., Wilmington, Del., American Cyanamid Chemical Corp., New York, General Electric Co., Schenectady, N. Y.; the Pliolites (rubber resins) of the Goodyear Tire & Rubber Co., Akron, O.; and Tornesit of Hercules Powder Co., Wilmington, Del.

Likewise in baking finishes, the specially processed fish oils and soya bean oils of Falk Co., Carnegie, Pa., have played an important part. Although great progress has been made in steel paints, real research is being performed in the study of proper protective coatings for steel products and doubtless many improvements will result.

Improvements Increase Graphite Applications

■ Four years' experimental work at the plant of Acheson Colloids Corp., Port Huron, Mich., has led to development of a new process permitting commercial production of graphite products having considerably smaller particle size and correspondingly improved suspension.

Instead of a single grade, this company plans to market several, distinguished primarily by a range of particle size. The top grade will contain particles ranging between one micron and the submicroscopic (1 micron = 0.00003937-inch). Particle size in this product is so minute that it may be said to border on true solution.

Another advantage is the availability of colloidal graphite in a considerably wider range of vehicles. In addition to water, petroleum, castor oil, glycerine and varnish, dispersions in kerosene, carbon tetrachloride and similar light-viscosity fluids may be had.

Chromium Plates 12-Foot Drum

■ **Possibly the largest single piece of equipment to be chromium plated is this 15-ton drum fabricated from welded steel plates. Diameter is 12 feet, width of face 6 feet. Entire face area, some 32,500 square inches, was precision ground to eliminate the slightest possible flaws prior to final plating. The heavy electro-plated chromium deposit was applied directly. Further grinding and polishing produced flawless mirror finish revealed in the inset above. Finished drum is part of equipment for coating high-grade paper. Photo courtesy Chromium Corp. of America, Waterbury, Conn.**

Diagonal Grids

All-welded grid design described here permits an average saving of 20 per cent in cost of structural steelwork. Fabrication and erection procedure also is detailed

By A. H. PANDYA
and
R. J. FOWLER
Diagrid Structures Ltd.
London, Eng.

■ THE MOST important result of arc welding when applied to steel structures is to produce a monolithic action between the various members connected together. Continuity thus obtained as a great economic asset as it tends to reduce moments and forces acting on the component parts of a load-bearing structural system.

Before considering complicated spatial structures, the plane grid, suitable for floors and flat roofs, will be examined. Best way to approach solution of a monolithic grid system is: First assume simple support conditions and independence of action for all grid members. Then superimpose effects of indeterminate forces and moments to restore continuity or internal restraint.

The plane grids under consideration comprise essentially a diagonal system of beams having the same cross-section, arranged in two parallel sets equally spaced and intersecting at 90 degrees or nearly so, and rigidly connected at the junctions. This layout gives, in all cases, beams of varying span and therefore of varying rigidity, if treated as independent of each other. When connected monolithically, those more rigid give relief to those more flexible and thus tend to equalize moments and shear forces on all beams in the structure.

Fig. 1 illustrates a typical diagonal grid bay supported along the boundaries only. Shorter side of the bay is divided into three and the longer into five equal divisions. It will be observed that the beams intersecting at the internal grid nodes not lying on an axis of symmetry would, if independent of each other, deflect by a different amount under symmetrical loading. In fact, however, these deflections at any node must be equal, which means that at every non-axial node equalizing forces act between the intersecting beams. There is, also, at the edge nodes the condition of equal end slop angles for both intersecting beams, which results in the occurrence of equalizing moments.

Fig. 2 indicates that all the grid beams are subjected to moments and shear forces which tend to attain a uniform maximum value, thus illustrating the true co-operative action between the grid beams. It will also be noticed that for any given layout the actual spans and loading can be varied without the necessity of a new calculation. This leads directly to the possibility of achieving standardization of calculations which are independent of the variables, span and load, and which once made can be applied to a variety of conditions. Furthermore, the selection of the size of grid beams can also be made in a few minutes from the maximum moment factor for a given layout.

Abstract of paper receiving second grand award of $11,397.06 in $200,000 program sponsored by The James F. Lincoln Arc Welding Foundation, Cleveland. Original paper states gross savings to industry may total $60,000,000 yearly through general adoption of this construction.

Single Pitch Grid Roof

For roof spans exceeding 50 feet it is common in normal design to make use of space frames, arches, trusses, etc. to support the roof covering, and the superimposed loads due to snow, wind, etc. In effect the depth of construction is increased in order to evolve a practical and economical design.

For monolithic grids the same results can be obtained by folding a plane grid to form a ridge along the centre line and two gable ends with horizontal ties as shown in Fig. 3.

The grid, instead of being made up of interlacing straight beams, now consists of a number of cranked beams which are fully continuous at the cranking points and are capable of transmitting moments from one side of the crank to the other.

From the moment diagram in Fig. 4, it will be observed that cranking the plane grid introduces virtual elastic supports for grid members at ridge nodes which are, in their nature, similar to internal equalizing forces acting upwards on the grid beams and downwards on the inclined lattice or rhombic girders formed by the grid beams and ridge and eaves members. These imaginary supporting forces reduce the moments and shear forces on the grid beams considerably, and transfer the superimposed loads to the

actual points of support along the boundaries by means of direct forces in the members.

Plane Grids

For single bays the sides of the bay forming the boundaries can be divided into two, three, four, five or even six equal parts, the aim always being to provide short corner beams (beam 1 in Fig. 1) and an angle of intersection as near to 90 degrees as possible. Sides of square bays are, however, best divided into three equal parts which are found to be most economical in practice.

All-welded steel diagonal grids have all the advantages of 2-way concrete flat slab construction with none of its disadvantages. The grids under consideration are entirely free from restrictive rules and are more adaptable to practical requirements. They exploit the 2-way reinforcement and drop panel ideas in the most economical manner, and all moments and shear forces are analyzed with great accuracy.

Spatial Grids

As in the case of plane grids for floors, the application of folded or curved grids can embrace almost any size or shape of spatial roof structure.

The effect of folding is to stiffen up the monolithic plane gride along ridge and valley lines. This removes many of the restrictions on the grid layout, and makes it possible to span distances up to 300 feet in the shorter direction (parallel to ridge and valley lines) and almost unlimited distances in the other direction.

It is difficult to exaggerate the significance of the above statement for modern requirements arising out of the developments of methods of transportation, as also industrial manufacturing processes call for economical structures providing large unobstructed spaces. Monolithic spatial grids fill the demand for large spans within bounds of practical economy, as available materials can now be utilized with maximum advantage.

Special advantages of the spatial grids under consideration include: Complete absence of bracings, tie rods and other similar members be-

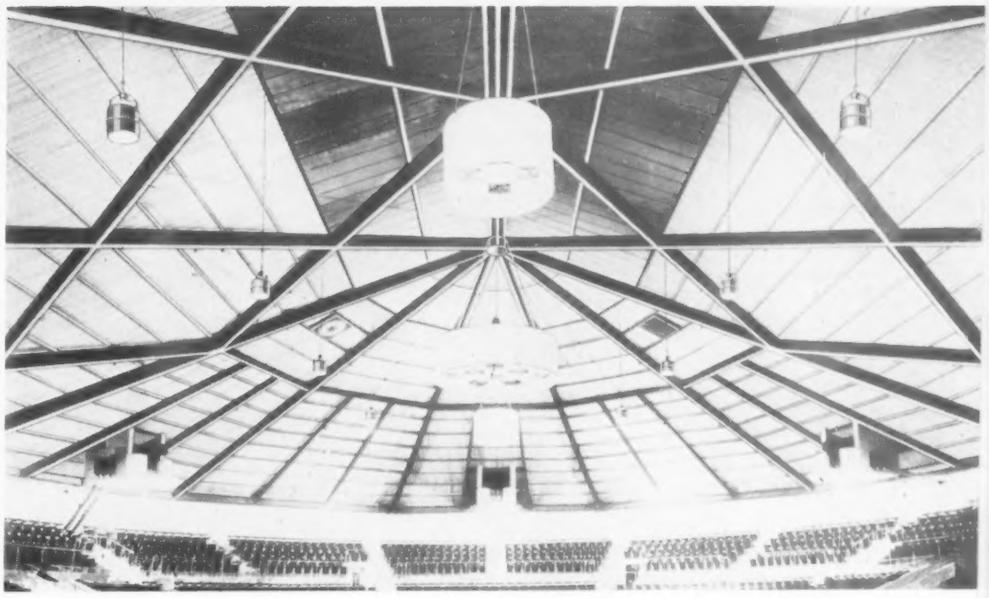


Fig. 5—Ice rink and Blackpool, England, having diagonal grid roof frame

Fig. 1—Layout of plane grid. Fig. 2—Moments and shear forces on plane grid. Fig. 3—Layout of single pitch roof. Fig. 4—Moments and shear forces on single pitch roof

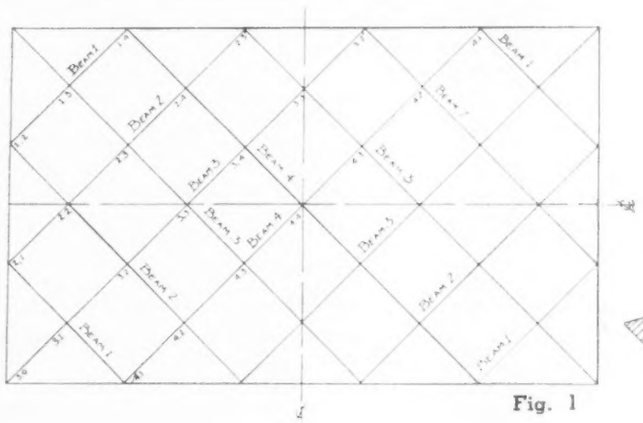


Fig. 1

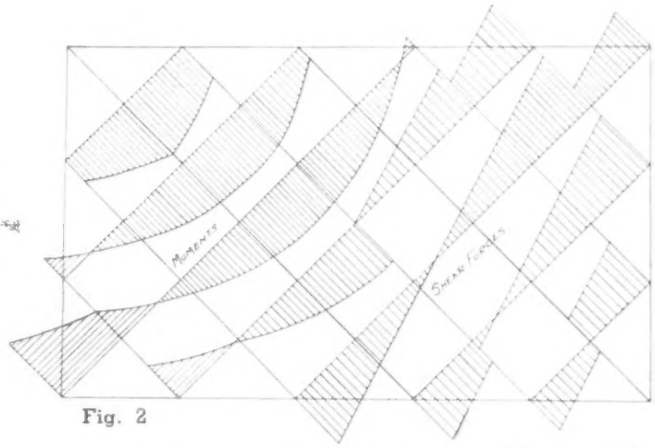


Fig. 2

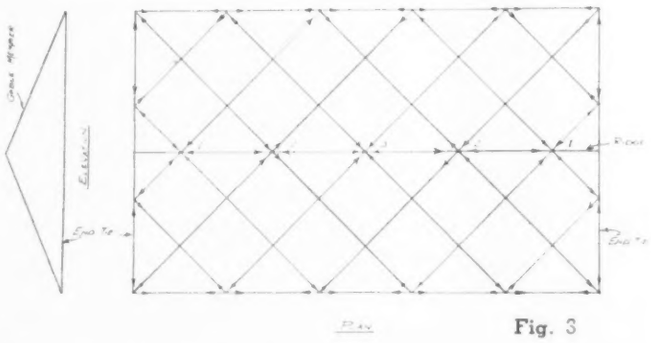


Fig. 3

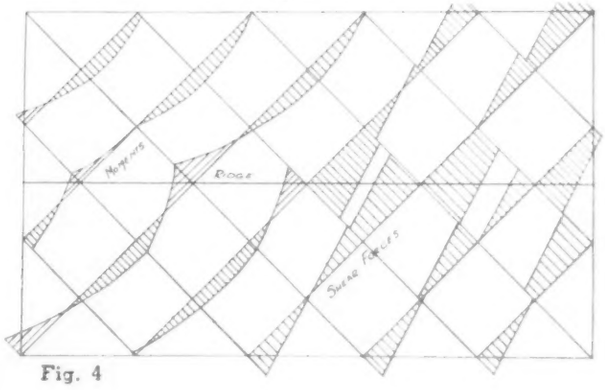
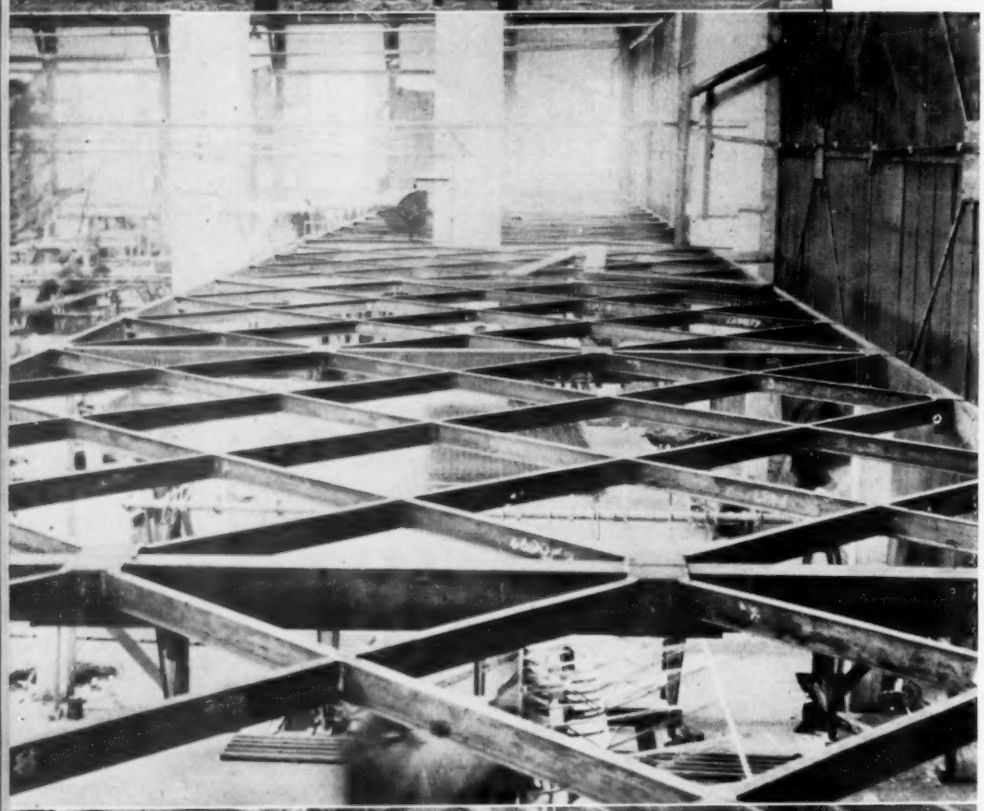


Fig. 4

Fig. 6 — Open air school at Manchester, England, with diagonal grid roofs



low the planes of the roof structure; area of painting is reduced as much as 40 per cent in many cases; by use of ordinary rolled steel sections, almost any spans ordinarily required can be covered economically; the roof structure, because of arrangement of members, is capable of resisting wind and other horizontal forces; spatial grids are better suited to withstand aerial attacks, which must be a serious consideration in the case of hangars, factories, garages, railway stations, etc., which usually expose a vast expanse of roof surface and constitute an easy target from the air. Storage space and cubic capacity of the structure are increased substantially because of absenoe of columns, ties, bracings, etc., and goods can be stacked from floor level right up to the underside of the roof planes.

Erection

To reap all the advantages available, erection must be considered apart from practice developed in riveted work. In the case of flat grids, the whole structure may be fabricated at ground level and then lifted up to just above its final level, stanchions erected and the structure welded together.

Roof erection is slightly more complicated. Each roof slope is assembled and welded complete on the ground with its eaves channels, gable channels, grid members and purlins on trestles at a suitable working height for the welders. On completion of the slope, it is lifted into position on the stanchions and temporarily propped until the adjacent slope is similarly lifted, and the two welded together at the ridge. Thus erectors and welders work mainly at ground level.

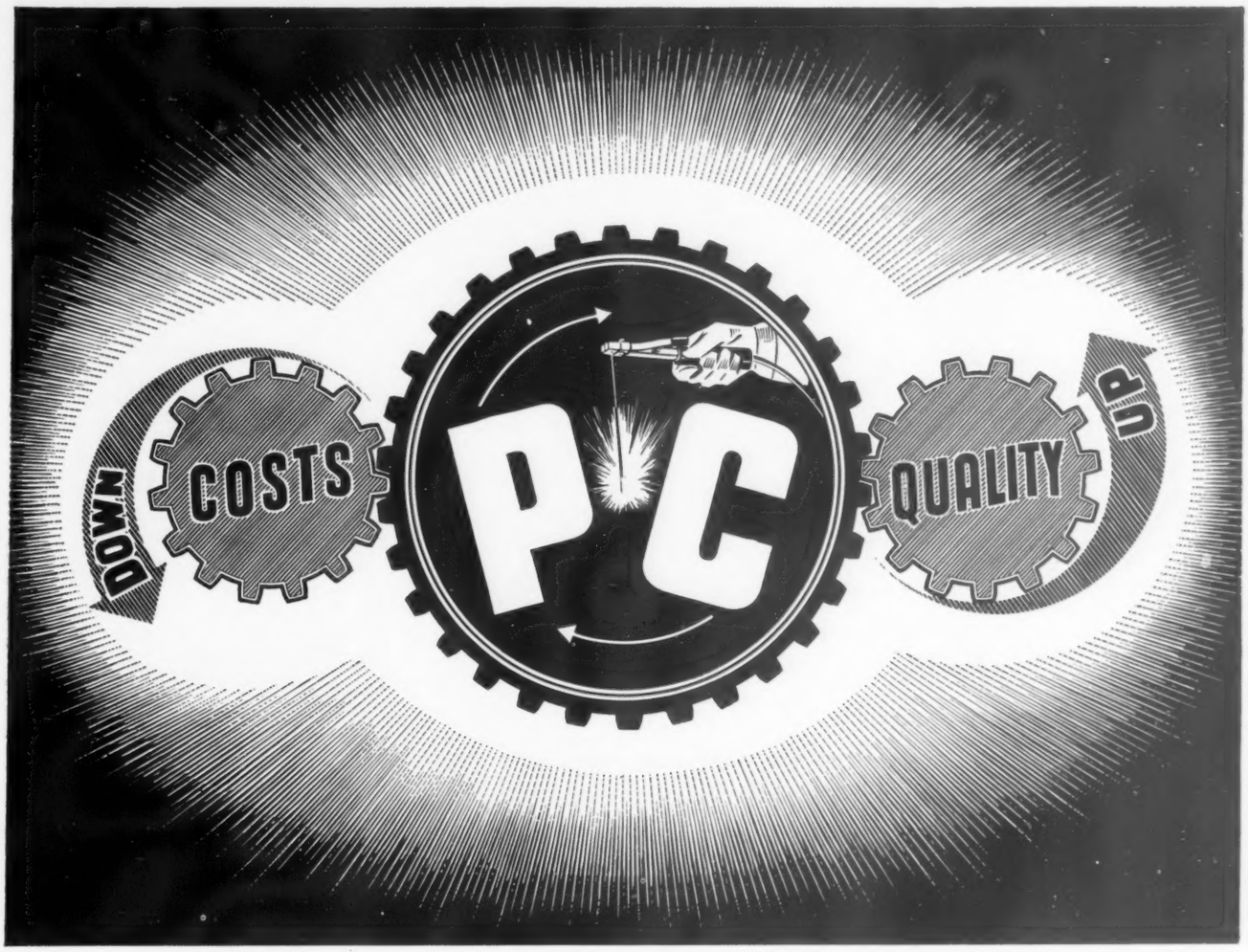
Also, smaller structures of the multiple bay type have been assembled completing at ground level and lifted in one piece. The great stiffness of the diagonal grid structure enables this operation to be carried out quite rapidly and safely.

Grid structures designed and erected since January 1, 1937 include: Factory at Bristol, England, shown in Fig. 5. It consists of 8 panels, 22½ feet square and 10 panels 20 feet square, supported on two rows of 8 x 8-inch precast concrete columns spaced on 22½ and 20-foot centers. Grids were considered continuous in one direction and were designed for a superimposed load of 100 pounds per square foot.

Grid beams and edge beams of this structure were prepared in the

(*Please turn to Page* 67)

Fig. 7 (Center)—Factory at Bristol, England, with diagonal grids. Fig. 8 (Below)—Drill hall in London, England, showing use of diagonal grids in roof framing



AN OPERATION FOR EXECUTIVE ATTENTION

for lower costs · · · for higher quality · · · for profits

• When the wheels of business slow down, every executive has a driving urge to *do* something about it. Here's a plan to convert that urge into *results*... more jobs for workmen . . . more earnings . . . more service value . . . *more profit for everybody.*

Start a *crusade for profits.*

As the first step, appoint from your organization a PROFIT CRUSADER. Such a man will make arc welding the spearhead of his attack. He *knows* from experience that welded steel construction cuts costs and improves products. Fired with zeal and enthusiasm, he develops superior products that cost less to build, less to sell, less to operate and less to service. The PROFIT CRUSADER makes everybody's dollar go farther.

As the second step, give the PROFIT CRUSADER executive *authority* to get results. Mr. R. G. LeTourneau, Pres., R. G. LeTourneau, Inc., Peoria, Ill., is one of the executives who recommends this plan of operation. He says, "To exploit successfully the far-reaching advantages of welded steel construction, the manufacturer or builder should have in his organization a man of authority with a zest for using welding."

We can help you in this crusade for profits. Call on the nearest Lincoln office for counsel or have your secretary write for the book shown below. THE LINCOLN ELECTRIC CO., Dept. Y-544, Cleveland, Ohio. Largest Manufacturers of Arc Welding Equipment in the World.

PROFIT CRUSADER—The man in your organization with a zest for cutting costs and improving products by means of welding. *Everybody profits.*

A book has been compiled giving valuable suggestions for the Profit Crusader. Write for your free copy of "How to Change Over to Welded Design for Profit."

THE LINCOLN ELECTRIC CO.
CLEVELAND · OHIO

Design Flexible Type of Fabricated Floor Plate

■ MANUFACTURERS having need for large floor plate areas find that the cast plates ordinarily used are rather inflexible in their application; that is, once the pattern is made, the size cannot be changed readily without considerable expense and trouble.

The maintenance division of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently designed and built a flexible type of fabricated floor plate. A considerable area employing this type of construction is now in use with entirely satisfactory results. Details may be seen in lower view which shows two sections of the fabricated floor plate, one upside down on the floor and one suspended from a crane revealing upper or working surface.

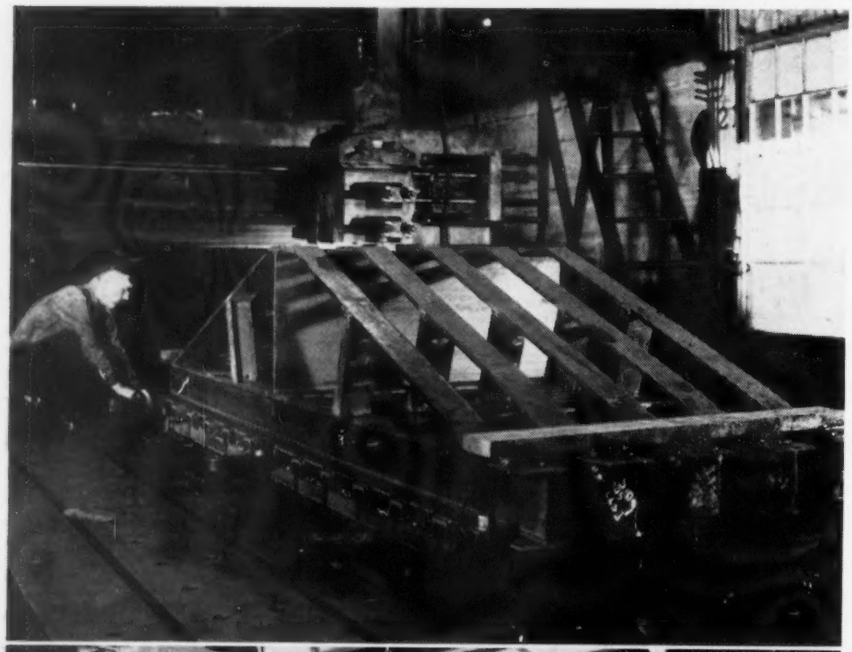
Working surface of this particular plate is composed of rolled steel slabs 2¼ inches thick, 10¼ inches wide and 12 feet long. These slabs are properly spaced on the floor to form the desired width of plate and are fastened together by means of channels whose legs are welded to the slabs as shown at bottom. These are 4 x 2½-inch, 13.8-pound standard channels.

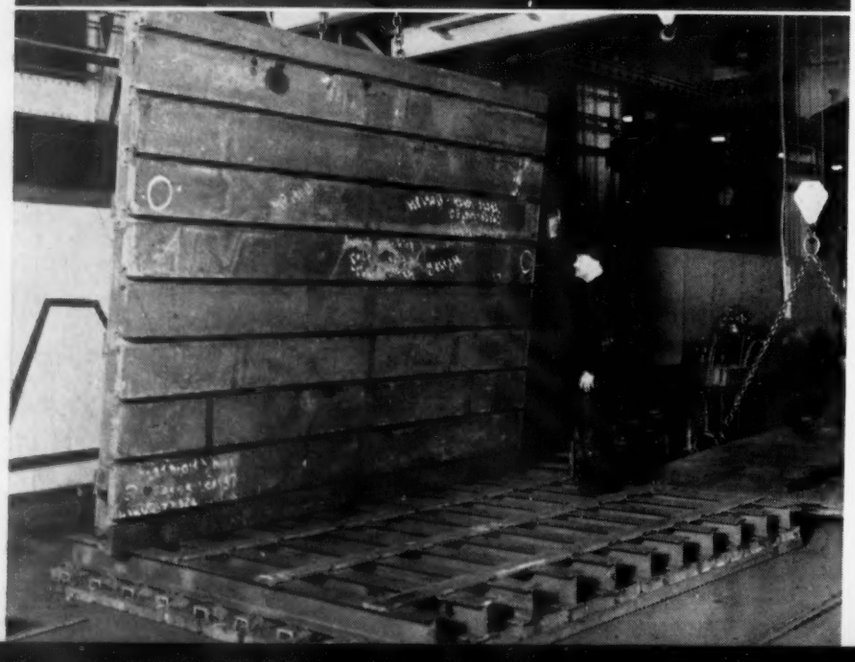
At right angles to the channels and slabs are then welded 22.5-pound H-beams, 6 x 6 inches in size which form the back bone of the plate. These in turn are tied together by four bars, ¾ x 5 inches, to insure that the H-beams will remain upright under load. Plates were made in various sizes to conform to the needs of the layout, this being accomplished easily because of flexibility of this design.

On a plate, 9 x 11 feet in area, there is approximately 4300 inches of ½-inch fillet welding. The plates were strain relieved, planed and drilled for grouting. At several places on the surface, not shown in the illustration, pipes were welded in forming openings extending through to the bottom for clamping the plates down after they had been leveled in place preparatory to grouting.

Upper view shows how this type of floor plate adapts itself to varying requirements. This is one of the regular plates, made as described above but with additional reinforcements, for use over a test pit. When the pit is not in use, floor plates of this construction cover them, presenting an unbroken floor plate surface. This reinforced type of plate is used in part of the plant where loads are heavy and rigidity requirements high. It has been entirely satisfactory. Weight as compared to a cast plate is but 60 per cent of the old type of construction. Also cost of the new design approximately 40 per cent lower per pound of finished plate.

Top view shows construction of plates used over pits and where extreme surface rigidity is essential. Lower view reveals details of arrangement of beams and plates making up this type of floor plate surface





Oxyacetylene Welding In Popular Treatise

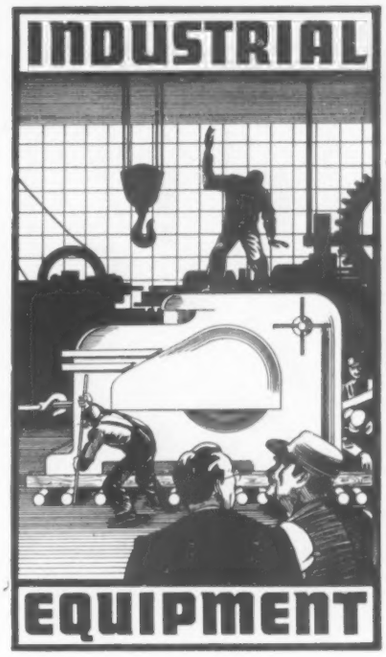
■ *Oxyacetylene Welding*, by Robert J. Kehl, revised by Morgan H. Potter; cloth, 130 pages, 5½ x 8¼ inches; published by American Technical Society, Chicago; supplied by STEEL, Cleveland, for $1.25; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

This treatise on welding, hard surfacing, lead burning and cutting by the oxyacetylene flame is written in a style adapting it to the use of the man entering the trade, the apprentice and those with wider experience. It is also adapted to school and library work. The text is embellished by 116 illustrations and several tables. An index adds to its usefulness.

After describing equipment and chemistry of the flame the book describes manipulation in welding of ferrous and nonferrous materials for original construction and repair work.

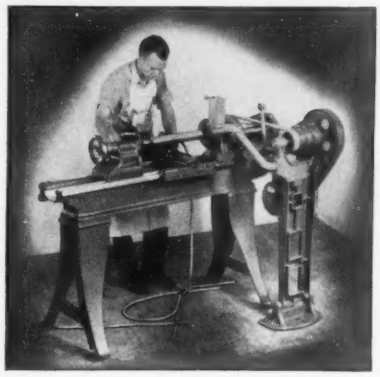
The subject of hard surfacing to give long wear is treated simply as to cast iron and alloy steel and a section is devoted to tipping tools with hard material.

ADVERTISING PAGES REMOVED



Pedestal Type Motor Drive Relieves Strain on Lathe

■ South Bend Lathe Works, 425 East Madison street, South Bend, Ind., has announced an improved pedestal type motor drive available



in all sizes of South Bend precision lathes, 9, 11, 13, 15 and 16 inches swing and bed lengths of 3 to 12 feet.

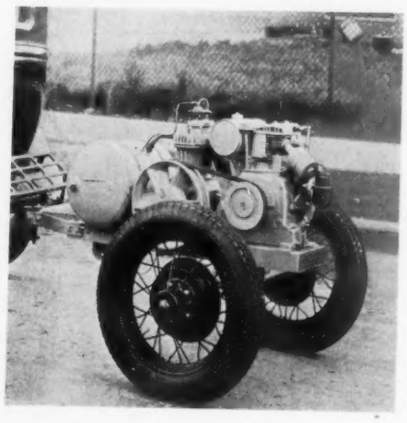
New double arm adjustable tension brace locks the pedestal motor drive unit rigidly in position when the lathe is in operation. Pulling a lever forward unlocks the tension brace, permitting the pedestal to tilt forward, releasing the belt tension.

Lathe is relieved of all strain with the motor and driving mechanism mounted on the pedestal. Power is transmitted from motor to countershaft by V-belts, and from countershaft to the lathe spindle by flat leather belt. This provides a smooth, steady pull, free from vibration and chatter.

Portable Painting Unit Is Mounted on Trailer

■ Binks Manufacturing Co., 3114 Carroll avenue, Chicago, has designed a variety of mounting styles for portable painting outfits. One of the latest is the MS-5 and MS-5A trailer type.

Designed to attach to the bumper



or frame of passenger car or truck, this mounting style is equipped with a sturdy trailer type hitch. Because of its good balance, unit is easy to move around by hand on the job. Rubber tires simplify progress over rough spots. When used inside unit does not harm wood floor finishes. Regular trailer type auto wheels are designed to travel at high speeds.

Style MS-5 has 30-inch and MS-5a, 16-inch pneumatic trailer type wheels.

Tractor Designed for Warehouse Hauling

■ Crescent Truck Co., Lebanon, Pa., has introduced a rugged type NT tractor, suitable for transfer and distribution of material on trailers at railroad and steamship terminals and piers and also for warehouse service.

Tractor weighs 2650 pounds, less battery, and has a normal drawbar of 350 to 550 pounds and an ultimate

drawbar of 1800 to 2200 pounds. Steering is front wheel pivot type by means of tiller handle with operator at left side of tractor. Double reduction drive has totally enclosed silent chain to worm and worm wheel construction with heavy duty four-pinion differential. Brake is external contracting type mounted on the worm shaft, and no braking torque is transmitted through motor.

Heavy duty General Electric motor drives tractor at 6 to 7½ miles per hour without load and 3.5 to 5.5 miles per hour with rated trailer load. Frame of tractor is built of heavy structural shapes and plates, formed, riveted and welded into a rugged unit construction. Wheels are semidisk type, mounted on adjustable oversize Timken roller bearings.

Rotary Files Announced

■ Grobet File Corp. of America, 3 Park place, New York, has placed on the market a complete line of rotary files including hand-cut rotary files, hand-cut rotary rasps, milled-cut files for drill presses and milled-cut files. These four classes are made either in high-speed steel or chromium steel.

Introduces New Furnace Pressure Control Device

■ Brown Instrument Co., Philadelphia, has announced development of its Air-o-Line furnace pressure controller for the indication and control of low range pressures and drafts in all types of furnaces, kilns, still and similar applications.

Controller is essentially a sensitive, inverted-bell type draft indicator combined with a control unit. Automatic reset and fully adjustable throttling range prevent furnace pressure from lining out at some point other than the control point and eliminate over-correcting and cycling.

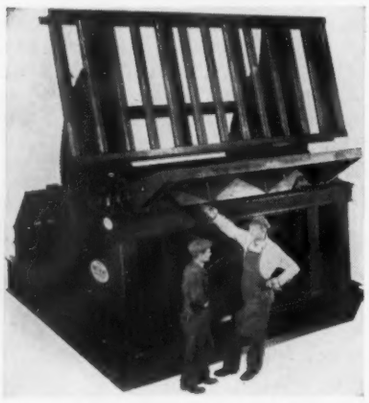
Instrument is said to hold furnace

pressures to within plus or minus 0.002-inch of water on a scale span of 0.2-inch of water. It is practically instantaneous in operation; pointer will move 10 per cent of the total range in one second and 100 per cent in three seconds.

Tilts Steel Sheets to Feed Cold Mill Conveyor

■ Mathews Conveyer Co., Ellwood City, Pa., has introduced a sheet pack tilting table, purpose of which is to tilt a pack of steel sheets at such an angle as to make it convenient to remove one sheet at a time from the pack to a belt conveyor feeding a cold mill.

This machine handles packs 74 inches wide, 18 inches high and 15 feet long, with a maximum weight of 25,000 pounds. Packs are received in a horizontal position, are tilted



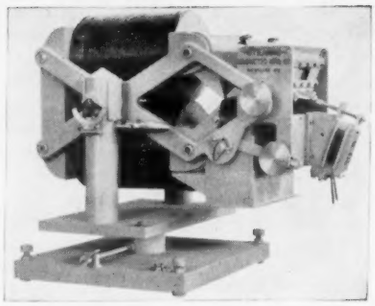
through an arc of 75 degrees and are placed in a position 15 degrees from vertical.

Heavy duty roller conveyer used is known as type 63SB; it has 4¼-inch diameter, 54-inch long rollers, spaced at 12-inch centers. Machine is operated by a 15-horsepower motor and tilts a 25,000-pound pack in about 30 seconds.

Separates Minerals and Ores in Single Passage

■ Stearns Magnetic Mfg. Co., Milwaukee, has designed a magnetic separator, styled as the KS Para-Magnetic, intended to give higher recovery and a sharper division of values in the separation of minerals and ores.

This device is distinguished by its simplicity of design and operating principle. Its magnetic field is designed for maximum concentration. The required number of fields usually can be incorporated into this separator to provide complete separation in one operation. These fields are arranged for and ad-



justable to varying degrees of magnetic intensity.

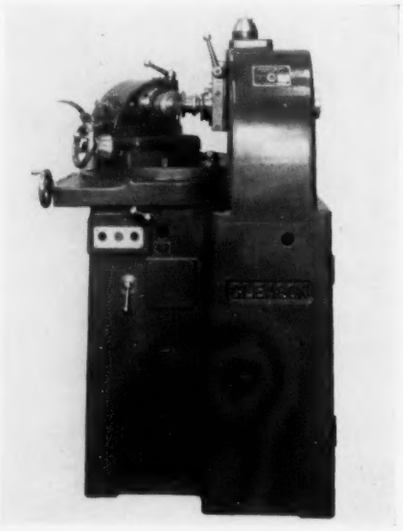
Rate of flow and type of separation are made adjustable to permit maximum capacity and high value in separation in a single passage of material through separator. Standard windings on the separator include voltage up to 250, and provision is made for accurate readings by ammeters in circuit with the windings. In this way each magnetic field can be regulated to a definite strength and power.

Tests Running Qualities Of Angular Type Gears

■ Gleason Works, 1000 University avenue, Rochester, N. Y., has developed a rigid testing machine for checking the running qualities of bevel and hypoid gears up to 6¾-inch diameter. Machine will accommodate all shaft angles from 0 to 180 degrees and pinion shaft offsets up to 1¼-inch either above or below center.

Pinion drive head can be operated in either direction at 1750 and 3500 revolutions per minute. Load is applied to the gear head by a hand brake, duplicating operating conditions and proving gears for size, spacing, noise, runout and tooth contact.

Both spindles are mounted on

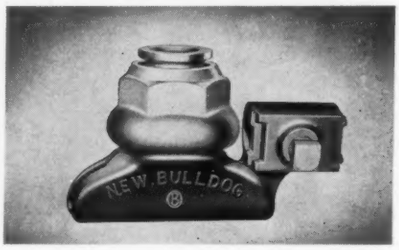


matched antifriction bearings, preloaded to eliminate radial and axial deflection. Spindle noses are heat treated, and taper holes are ground with spindles mounted in their own bearings to insure absolute concentricity. Floor space occupied by the machine is 31 by 36 inches, and net weight of the unit is 1600 pounds.

Bronze Trolley Clamp Has Adjustable Jaws

■ Ohio Brass Co., Mansfield, O., has announced development of a new Bulldog feeder clamp with clamp type terminal. Jaws open and close to accommodate the trolley wire when the clamp nut is turned. Adjustable terminal is operated by means of a set screw and will accommodate a wide range of feeder tap sizes. Both clamp jaws and feeder terminal are bronze.

This trolley clamp with adjustable clamping device for feeder tap



is available in two styles, one for 0 to 6/0 grooved and Fig. 8 wire, and one for 3/0 and 4/0 round wire.

Cell Filler Simplifies Adding Water to Battery

■ Electric Storage Battery Co., Allegheny avenue and Nineteenth street, Philadelphia, has announced an improved Exide water cell filler, designed to simplify the adding of water to motive power batteries and eliminate overfilling or underfilling.

Designated as type LV, filler consists of a molded semihard rubber nozzle with a set of electric contacts and a filler pipe molded in. A handle is mounted on the filler pipe. There is a Lunkenheimer hand-operated valve behind the handle, to which is connected the rubber hose leading to source of water supply. Electric wires which pass from nozzle contacts into the handle and signaling device are covered with a molded, semihard rubber tube for protection.

Cell filler takes its electric current for the signaling device from battery that is being filled. Signaling device can be either a lamp or a buzzer. Unit is made in two stand-

ard lengths, distance between center of handle and center of nozzle on short filler being 14 inches and on long filler 21 inches.

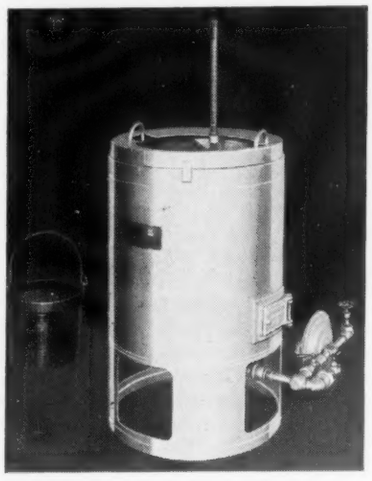
Designs Special Tap for Producing Dam Screws

■ Landis Machine Co., Waynesboro, Pa., has added to its line a special 5-inch tap with replaceable chasers, intended for use in conjunction with special die heads for producing the screw mechanism which will operate the control gates of a large dam, now under construction.

This tap will be used for finishing and sizing after threads have been roughed out on a lathe. Thread is 5 inches in diameter and has a 2/3-inch pitch, 1 1/3-inch lead and a depth of 0.346-inch. Tap body, which is 30 inches in length, is alloy steel and has been precision ground after heat treating. Chasers are locked in correct cutting position by three hollow head set screws and can be removed by unlocking these screws and removing face plate.

Tempering Pots Operate On Low Gas Consumption

■ American Gas Furnace Co., Elizabeth, N. J., has placed on the market a newly designed tempering pot for the tool room or small shop. Featuring greater ease of control and increased uniformity, these furnaces may be used for temperatures ranging from 400 to 1000 degrees Fahr., an oil bath being employed for lower temperatures and salt for higher temperatures.

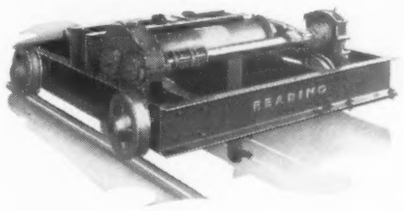


An insulating lining reduces heat storage to a point where it is negligible. Uniform heating is provided by a bottom burner of special construction and top venting. This burner is supplied either to use air at one pound per square inch pressure and gas at line pressure or to operate with low pressure gas only and an atmospheric or Bunsen burner as specified.

Size illustrated has a pot 11 inches deep; a similar furnace with a 17 by 12½-inch pot also is furnished. These units are equipped with a mesh wire basket for handling general run of small parts. They have a mercury thermometer with a 200 to 900-degree scale. Gas consumption is said to be low. Smaller size furnace uses a maximum of 60 cubic feet per hour of 525 B.t.u. gas and 20 cubic feet per hour for maintaining a temperature of 500 degrees Fahr.

Crane Is Efficient in Areas of Limited Space

■ Reading Chain and Block Corp., Reading, Pa., has introduced an overhead electric traveling crane



adapted especially for heavy handling operations where floor space and headroom are limited.

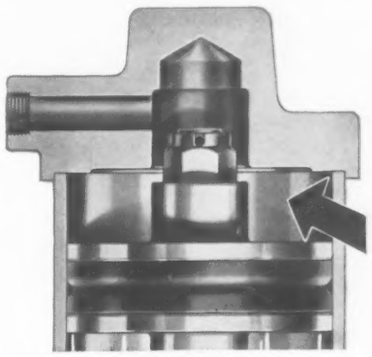
Complete hoisting mechanism is built into the trolley, thus providing more headroom below the double girder bridge beams. Hoisting hook goes whole way up between the bridge beams, permitting maximum high hook travel.

Features of this crane include positive fast and slow hoisting speeds regardless of load, protection from oil leakage, anti-friction bearings and easily accessible crane bridge drive. This unit may be built to plant specifications.

Cushioned Air Cylinders Bring Smooth Operation

■ Galland-Henning Mfg. Co., South Thirty-first street, Milwaukee, has added to its line a new series of air cylinders with non-adjustable cushion-heads in the same price range as non-cushioned type air cylinders.

This type of cylinder is said to eliminate noisy, destructive, metal-



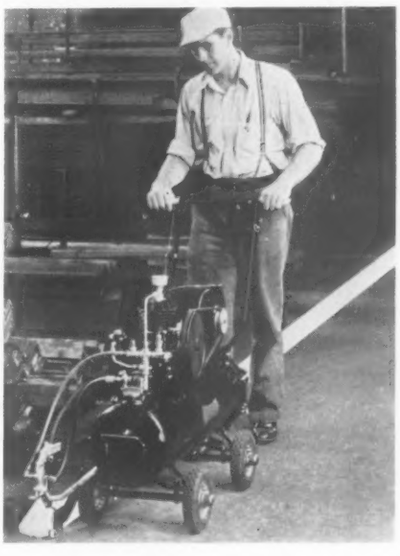
to-metal impact common to non-cushioned cylinders. This feature adds to the durability of cylinders and assures smoother, more efficient operation and lower maintenance costs for air-powered equipment, it is said.

Air cylinders with adjustable cushion-heads are recommended for applications where accurate control of cushioning is required at end of the piston stroke.

Spray Outfit Lays Lines On Floors and Platforms

■ Sayler-Beall Mfg. Co., Detroit, has developed a machine for painting traffic lines on factory and warehouse floors, freight docks and loading platforms. It is said to be capable of laying over two miles of clean-cut line, 2 to 4 inches wide, in an hour, as compared with the average of 700 feet per day by hand painting.

Equipment consists of a single cylinder air compressor driven by a gasoline engine, 12-gallon air-paint storage tank, pressure feed



spray unit—all mounted on rubber tired, ball bearing wheels. Edges of spray are cut off by articulated shields. Flow of material is regulated by operator through trigger control on guiding handle. Dual spray attachment is available for painting parallel lines.

Thermo-Electric Device Prevents Overheating

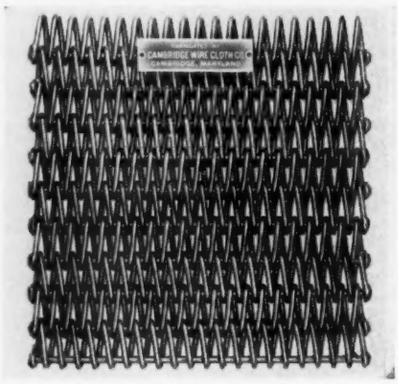
■ Bart Products Co., Bartlesville, Okla., has introduced a small device called Thermo-Safety, which is attached to engine or machine bearings, water jackets, electric motors, ovens or other apparatus in danger of overheating, and which stops apparatus and operates a signal when overheating occurs.

Device contains two electrical contacts normally held apart a sufficient distance to prevent sparking across of the electrical circuit in which it is used. Terminal is insulated from body of the device and has a binding screw to which one wire of the circuit is attached. Other end of the circuit must be grounded to the machine which is to be protected. When temperature rises to a predetermined degree, contacts are forced together, shorting circuit between terminal and body.

This device is made in standard temperature ratings for each type of application, and special ratings and designs can be furnished. Standard thread on its body are ½-inch A.N.S. for bearings, ovens, etc., and ¼-inch pipe thread for applications where liquid seal is required, such as engine and compressor water jackets, etc.

Mesh Conveyor Belting Has New Construction

■ Cambridge Wire Cloth Co., Cambridge, Md., has developed a mesh conveyor belting, known as Gratex, construction of which consists of alternate clockwise and counter-



clockwise spirals connected with a large gage straight wire, as shown in the accompanying illustration. Such construction is said to insure straight travel, flat carrying surface, unusual flexibility and utmost strength. It is well suited to installations where loads are heavy and a fine mesh is required.

Simple Fitting Controls Low Pressure Lubrication

■ Keystone Lubricating Co., Twenty-first and Clearfield streets, Philadelphia, has developed a simple device, known as the BB fitting, which controls low pressure lubrication of ball and roller bearings and prevents both over-lubrication and under-lubrication.

This fitting is attached to bearing at male end, and the pressure fitting or grease cup is inserted at the other end. Lubricant passes from pressure fitting or grease cup through inlet into fixed hollow calibration tube, thence into bearing. When bearing has received proper amount of lubricant, any excess passes back into calibrated area to escape ports, where it is immediately visible. Fittings are made in ⅛-inch and ¼-inch pipe thread sizes.

DON'T

Close Your Eyes

to

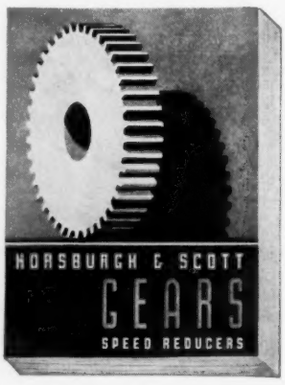
PROVED

GEAR FACTS

Consider These 8 Advantages

1. Gears are individually fitted to your needs . . . yet standardized as to size and design for economy in manufacture.
2. No pattern or tool charges except for very special gears.
3. Pleasing heavy pattern design.
4. Accurate machining and cutting to specifications.
5. Finest materials exactly to specifications.
6. A complete service . . . gears from the largest to the smallest in industrial use.
7. Prompt quotations and deliveries.
8. Gear specialists for over 50 years . . . an organization that knows the engineering and art of gear making. An organization that can save you money and help you in your problems of industrial power transmission.

Your name on your company letterhead brings you this valuable 448-page catalog that illustrates and describes a complete line of all types of Speed Reducers and Gears.



THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVE., CLEVELAND, O., U. S. A.

British Institutes Hold Joint Meeting in London

(*Continued from Page* 49)

sized the fact that success of any system of foundry production, particularly as regards mass and continuous production, depends largely on sand control.

Dr. J. G. Skerl, St. Albans, Hertfordshire, pointed out that in devising testing methods, especially as regards molding materials, one of the major difficulties is to decide upon the degree of accuracy with which to approach results. He mentioned that in 1923 an accurate method of testing was introduced by a Swede, but that method required expensive apparatus, and it was then decided to retain the Boswell method, as its accuracy was deemed sufficient for the purposes of average foundries without putting them to unnecessary expense. He suggested that in further research the committee will be obliged to decide on what should be considered the required degree of accuracy.

F. N. Lloyd, F. H. Lloyd & Co. Ltd., Wednesbury, Staffordshire, a member of the subcommittee, stated that much of the stripping trouble met with in steel casting practice is due to texture of the sand, as, in the case of molding material giving molds with open pores, the steel penetrates into the mold. This means, therefore, that there must be a compromise between the desire for permeability and the desire to have a smooth surface.

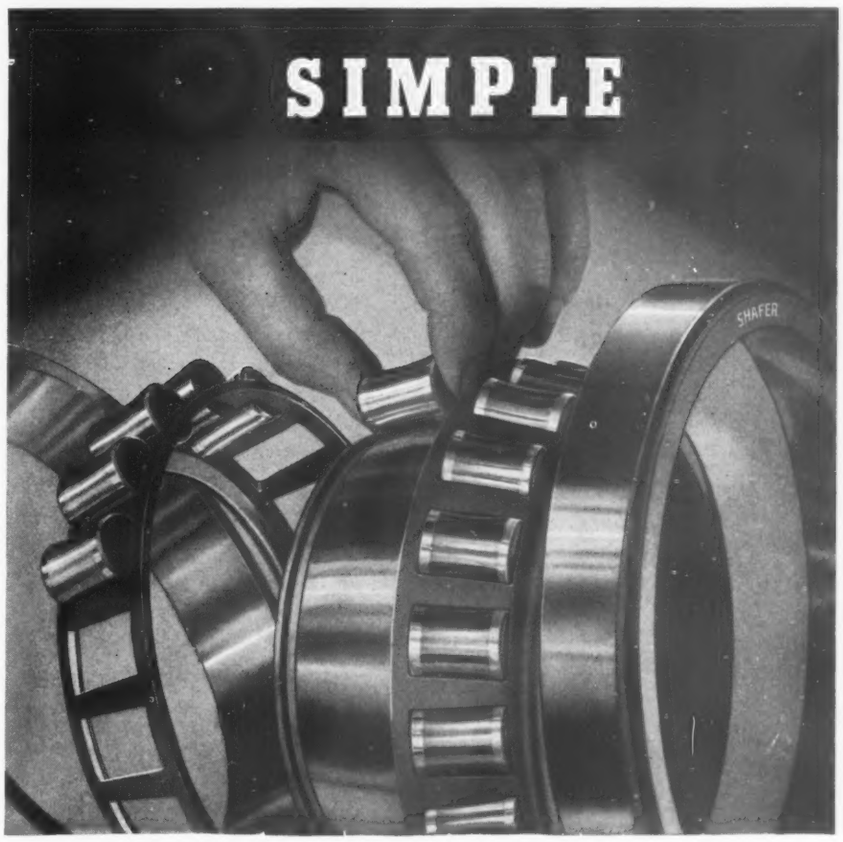
Presents Ductility Tests

Section IV of the report on strength and ductility of cast steel during cooling was presented by H. F. Hall, Research Department, Woolwich. Under the author's direction, tensile tests were made for determining the properties of cast steel during cooling in the mold. The influence of additions of manganese up to 2.5 per cent showed a relatively slight lowering of the temperature at which ductility set in. High sulphur caused a pronounced lowering of the temperature at which the steel acquired ductility, and a marked decrease in tensile strength at temperatures down to well below 1200 degrees Cent. A test was developed with the object of indicating the susceptibility to hot tearing.

Dr. C. H. Desch, superintnedent, metallurgical department, National Physical Laboratory, Teddington, Middlesex, suggested tests be made to investigate the influence of carbon on the strength of steel castings, and also the influence of oxides.

Martin Alexander, Research Department, Woolwich, presented Section III of the report on copper-steel castings. The author investigated the effect of 1 per cent copper in cast steels containing a little less than 0.3 per cent carbon together with manganese, chromium and nickel. Results indicated that copper is a valuable alloying element in castings, improving mechanical properties of the annealed steels and rendering the castings susceptible to a hardening treatment which can be carried out at a temperature below the critical range without distortion or setting up of internal stress.

Section II—one of the important sections of the report—dealing with fluidity of iron-carbon and other iron alloys, was submitted in two parts. Part A was prepared by Prof. J. H. Andrew, G. T. C. Bottomley, Dr. W. R. Maddocks and R. T. Percival, Sheffield University, Sheffield. The investigators carried out fluidity tests with the standard spiral mold described in the "Second Report of the Steel Castings Research Committee" and extended these tests to iron-carbon alloys containing varying amounts of silicon, copper, chromium and nickel, respectively. It was clearly evident from results that temperature is



Thrust capacity is a part of the simple basic design of the Shafer Bearing. The CONCAVE rollers and curved races provide for radial, thrust, or combined radial-thrust loads in any proportion—without the need for additional features. The curved roller design also provides integral self-alignment, and a simple means for adjustment of the bearing. Only Shafer includes all these features in one bearing.

Write for Catalog 14 with complete information.

Available in a full range of sizes: Pillow Blocks · Take-up Units · Flange Units · Cartridge Units · Hanger Boxes · Duplex Units · Flange-Cartridge Units · Conveyor Rolls · Radial-thrust Roller Bearings

SHAFER

SHAFER BEARING CORPORATION
35 EAST WACKER DRIVE · CHICAGO, ILLINOIS

self-aligning roller bearings

the all-important factor with respect to fluidity, composition in itself playing a minor part.

The Ruff fluidity test, subject of Part B, was described by T. R. Walker, English Steel Corp., Sheffield, who made special reference to results of the test as used in a large number of investigations carried out in foundries. This was amplified by another reference to the subject by Dr. R. J. Sarjant and T. H. Middleham, Sheffield, who reported on "Fluidity-Temperature Relations of Cast Steels of Various Compositions." Investigations were made using the Ruff test, first by means of experimental trials on steels of various compositions under closely-controlled conditions as regards temperature and pouring of the metal, followed by works trials under normal conditions of industrial practice.

At the meeting of the Institute of Metals, L. E. Price and G. J. Thomas, Goldsmiths' Metallurgy Laboratories, Cambridge, presented a paper on "Oxidation Resistance in Copper Alloys." The authors showed that an alloying constituent added to prevent high temperature oxidation should have a sufficient affinity for oxygen, and should on heating form an oxide film of high electrical resistance. By pretreatment of aluminum-copper alloys in suitable atmospheres, continuous films of pure alumina were formed on the surface of the alloys, which resulted in increased resistance to oxidation.

Aluminum Alloys Discussed

In a paper on "Some Characteristics of Copper-Aluminum Alloys Made from Aluminum of High Purity," Dr. Marie L. V. Gayler, scientific officer, department of metallurgy, National Physical Laboratory, Teddington, Middlesex, stated it is extremely difficult to obtain a 4 per cent copper-aluminum alloy made with super-pure French aluminum in such a condition that it will age harden uniformly to the maximum extent at room temperature.

It was suggested that the lack of homogeneity in the age hardening of these alloys is due to the fact that: (1) The alloy is not easily work hardened, owing to the aluminum matrix being plastically deformed without appreciable work hardening, probably on account of partial self-annealing during working; and (2) the particles of $CuAl_2$ act in a manner similar to that of the hard particles in a bearing metal and are, consequently, little deformed except under special conditions.

Cleans Sheet Iron After Stamping and Drawing

■ Primarily intended for removing from sheet iron mineral and vegetable oils commonly used in stamping and drawing operations, an industrial cleaner known as Pemco has been placed on the market by Porcelain Enamel & Mfg. Co., Baltimore.

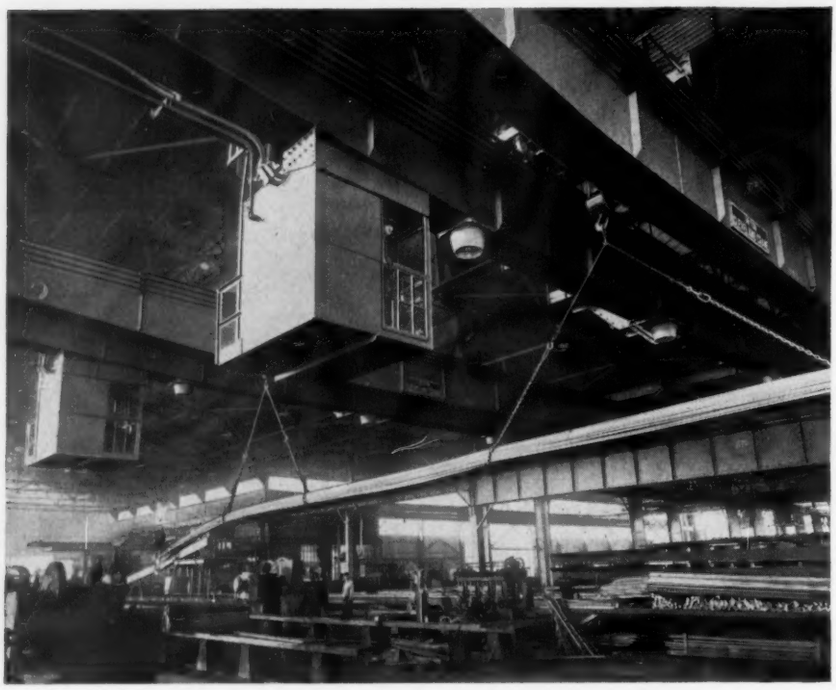
Its action soapifies and emulsifies. Cleaner is precombined and contains no free resin or other ingredient which depends on high temperature reactions to effect perfect cleaning combination. All components are soluble in warm water, assuring freedom from any adhesive, free-floating particles in the cleaner bath, which later adhere to pickled ware.

Wax Serves as Adhesive

■ A new wax introduced by Glyco Products Co., 148 Lafayette street, New York, has the property of being sticky or adhesive. It is known as Flexo wax C and exhibits high adhesive properties on glass and metals. Blending easily with resin, oils and other waxes, this material has high water-repellant properties and is non-crystalline.

CLEVELAND CRANES

All Welded for Every Industry



• An installation in a Steel Mill for heavy continuous service, of two 10 Ton 96' Span All Welded Roller Bearing Cranes.

ALSO BUILDERS OF CLEVELAND TRAMRAIL MATERIALS HANDLING EQUIPMENT

THE CLEVELAND CRANE & ENGINEERING CO

1125 Depot St.

WICKLIFFE, OHIO

NEW YORK • DETROIT PITTSBURGH • CHICAGO

Mechanical Charging

(*Concluded from Page* 48)

room floor to close the bottom. Charging crane then carries bucket outside to the positioning device shown in Fig. 6. The sloping sides of this framework are employed to make it easy for the operator to position the bucket correctly on the conveyor. This is a roller type conveyor similar to the unit on which the loaded bucket rides from the scale to the position underneath the monorail.

After depositing bucket on conveyor, trips are actuated which permit the bucket to roll into position on the scale underneath the loading hopper. This series of loading operations is repeated as many times per day as may be necessary to meet production requirements.

With this setup, it is possible to charge 30 tons per hour. This is done with a minimum amount of labor. Compared to hand charging the elimination of fatigue as well as the necessity of working under unfavorable conditions of heat, smoke and gas that usually prevails, is most welcome by the operating personnel.

Also the better working conditions make it easier to maintain close control of all details of charging operations and so may be a contributing factor to obtaining a better product. Eliminating former hand work in the yard also has been a benefit. All of the equipment described above was furnished by Shepard Niles Crane & Hoist Co., Montour Falls, N. Y.

Diagonal Grids

(*Concluded from Page* 56)

shops of the steelwork contractors. Edge beams and edge connection details were assembled and tack-welded together in square panels on trestles under their final positions, grid beams assembled, tack-welded and then welding completed.

It was found that distortion of the grid panels was completely eliminated by making buttwelds and fillet welds connecting the grid beams on both top and bottom flanges, from the center outwards. Panels were lifted onto precast reinforced concrete columns by one erection pole and ragbolted in position.

The open air school at Manchester, England, in Fig. 6, consists altogether of 11 roof panels of varying sizes, the largest individual panel being 26 feet 8 inches square. All are supported on steel stanchions at the panel corners. Some grids were cantilevered out to form a canopy and others were made continuous in one direction.

All sections were sent direct from the mills to the site without preparation and all preparation was carried out on site by acetylene gas cutting, except in the case of the splicing plates which were prepared in the shops. The remainder of the erection was completed as described in the previous example.

Fig. 6 is a view of the structure in which the method of lifting the complete panels with four erection poles is clearly shown. Stanchions were erected after the panels had been raised, the panel lowered to them and bolted temporarily until the welding between the stanchion caps and the grid was completed.

In Fig. 7 is a London drill hall with a single pitch roof, 82 x 52 feet in plan, resting on concrete edge beams at eaves level. Absence of internal tie rods and bracings is important because the structure is used for purposes which necessitate a ceiling higher in the central portion than at eaves level.

Material Gas Cut on Site

All material including plate for connection details was despatched to site from stock, to be gas cut to length and shape. As the steelwork was carried on a concrete wall all round the periphery, it was thus a few inches longer than the internal dimension inside the end walls. It could not then be fabricated in complete slopes on the ground, but portions were omitted from the ends of the slopes, which were erected separately after the slopes were in position.

One lifting pole was used to erect each slope, placed in the center of the slope. During lifting, a deflection of approximately one foot was obtained as the ropes attached to the center of the slopes carried more weight than the wide angle ropes attached to the slopes nearer their ends. Careful inspection of all welds under these conditions of severe stress showed no indication of failure.

No Internal Supports

The ice rink at Blackpool, England, in Fig. 8, consists of a single-pitch roof of 133-foot span with one semi-circular end covered by a half cone. The longer dimension in plan is 150 feet and there are no internal supports of any kind. Along the boundaries at eaves level the structure is supported on concrete columns and in the center the apex of the half-cone provides a virtual support for one end of the pitched grid along the ridge.

All material except the grid beams and main members for the half cone section were shop prepared. The latter were sent direct to the site from the mills and were gas cut to length. Temporary erection towers supported members during erection and welding. They were built up from light section material bolted together to facilitate dismantling after use. Timber platforms were provided at the top of the towers and a timber seat was made in the center of each platform to engage the grid members or connection detail supported. The towers were portable in order that they could be moved as the erection advanced to further intersections.

From tests made under official supervision in Great Britain, it is reasonable to assume that the adoption of the all-welded grid design would lead to an average saving of 20 per cent in cost.

Finishing Forged Rolls Is Delicate Operation

■ STEEL ROLLS usually are forged from large end-up type ingots of electric or acid open-hearth steel. Rigid heating cycles must be followed in heating roll ingots for forging and in the subsequent anneal to obtain the best possible annealed structure, it was pointed out in a paper presented by J. R. Adams and H. L. Watson Jr. at a recent meeting of the association of Iron and Steel Engineers held in Baltimore. After preliminary machining, rolls are given a prehardening treatment consisting of various quenches and draws dependent on their size, composition and intended service. Microexamination determines whether or not the prehardening treatment has been successful.

Prior to hardening, rolls are finish machined. They are heated for hardening in specially designed furnaces and then quenched in a suitable medium. During the hardening operation precautions must be taken to protect journals and hazardous features of design which cannot be eliminated in machining. Rolls must be stress relieved after hardening without appreciably lowering their hardness.

Hardness usually is determined with a scleroscope. After hardening all machining that remains to be done, such as cutting grooves, keyways and splines, is completed. Rolls then are finish ground. The successful grinding of rolls, especially those exceeding 90 in scleroscopic hardness and those requiring a high finish, can be done only after a careful study of sequence of wheels,

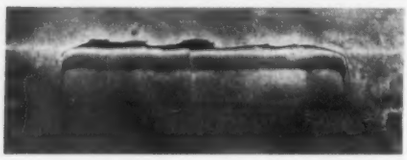


Fig. 1—Severe grinding wheel burn. Stationary roll struck by revolving wheel. Etched with 5 per cent nital solution

grinding speeds and cuts, grinding compounds, etc. has been completed.

The highest mirror finish can be attained only through the use of a selected set of grinding wheels, using each wheel until all marks produced by the preceeding wheel have been removed. Wheels should be soft and free cutting and should be kept clean at all times, otherwise excessive heating and burning of the roll will result.

Bad chatter and feed lines cannot be removed with a wheel of finer grit than the one which produced them. A finer wheel may burnish over them, but a few hours of rolling will redevelop them on the roll face. Striking the face of a stationary roll with a grinding wheel can produce severe burns—sometimes resulting in the face of the roll cracking or spalling as shown in Fig. 1.

Etching with 7 per cent nital solution of nitric acid in alcohol turns the burned areas of tempered martensite black while the unburned portions remain light. Whether the roll is hit with a wheel or has bad chatter or feed lines, the process of etching, regrinding and re-etching should be continued until all traces

Fig. 2—Detail fractures going in opposite directions from injury on face of reversing-mill roll

of the injury have been removed. Unless effects of these injuries are removed, the roll may fail in service.

Accidents in rolling play an important part in roll failures but the actual failure usually does not occur at the time roll was injured. Wrecks or skidding of the metal between rolls may produce burns which cause surface checking. The latter often is the nucleus for detail fractures growing inward in a spiral direction opposite to direction of rolling. Spalling results when the detail fracture has grown sufficiently large. Reversing-mill rolls often show detail fractures growing in opposite directions from an injury on the surface as shown in Fig. 2. After etching with 7 per cent nital, injuries produced by wrecks or skidding darken.

The likelihood of roll failures from rapid heating generated in making heavy reduction can be lessened by preheating rolls before using. Slow heating from the bores with exhaust steam is recommended, as it lowers the temperature differential between the bore and the rolling surface and thereby greatly lessens the effect of strains set up during rolling. In the same connection, it is advisable to preheat the coolant used in the bore. Too steep a temperature gradient may cause splitting from cracks originating in the bore.

Although more forged steel rolls

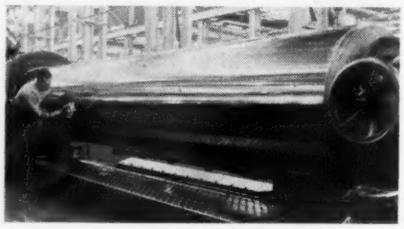


Fig. 3—This mirror-finished body roll is 40 inches in diameter and 191 inches long

are used in the steel industry than in any other, many are used in the rolling of brass, copper, aluminum, zinc, tin and precious metals. Forged steel rolls are used in 2, 3 and 4-high single stand and 4-high tandem mills for cold rolling steel. Rolls of forged steel also find use as backup rolls in 4-high and cluster mills as well as in levelers, coilers, bar straighteners and many others.

The variety of uses for hardened forged-steel rolls is increasing rapidly until today there are many special rolls used in industries other than the metal industries. Some of these rolls, such as the one in Fig. 3, are larger than any used in the steel industry.

Saving Business Records

■ *Preservation of Business Records*, paper, 48 pages, 6 x 9 inches; published by Business Historical society, Baker Library, Soldiers Field, Boston: for free distribution by the society.

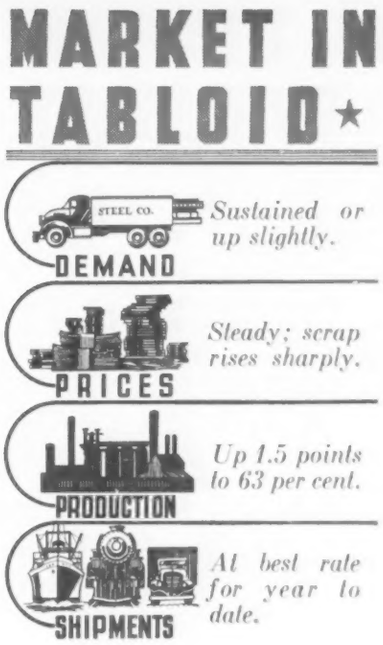
This pamphlet supplies answers to four questions: Why should business records be preserved; what material should be selected; how should records be preserved; when should preservation be undertaken.

At present storage is more of a problem than in the past and this booklet indicates how intelligent sampling of forms can obviate necessity for storing all records but meet demands of business men and business students. It set up a schedule which can be put into effect economically by most firms to preserve their most important records. It also contains a discussion of current practices of such firms as an advertising agency, bank, department store, public utility, railroad and several types of manufacturing concerns.

ADVERTISING PAGES REMOVED

Steelmaking Gains; Autos Lead Demand

Sustained Operations In Prospect For Near Future



■ CONTINUING to draw its best support from the automotive industry but reflecting moderate improvement in demand elsewhere, steelmaking has edged upward to the year's best level, accompanied by a burst of strength in scrap markets.

New business in some products is heavier than a month ago, but with active buying of sheets and strip made unnecessary by previous heavy coverage, total bookings in November appear likely to fall below the October volume.

Pressure to relieve backlogs of flat-rolled steel will bolster steelmaking the remainder of this quarter, however, and partly is instrumental for giving November ingot output the prospect of showing the largest percentage gain over October in history.

While the sharp rise in automotive operations recently finds no duplication among other important consuming industries, the upturn is ascribed to like betterment in retail sales and is responsible for upward revisions in assembly schedules for coming weeks.

Expect Auto Output to Top Million Units This Quarter

Automobile production in both November and December is expected to be close to 400,000 units, giving the quarter a 1,000,000-unit output. This would approximate the total for the corresponding 1937 period and would compare with 1,154,806 units two years ago.

Motorcar assemblies last week at 96,735 were the highest in 15 months and 10,000 units ahead of both the previous week and a year ago. General Motors boosted output from 42,100 to 44,250 for the week; Chrysler rose from 20,350 to 24,950; Ford from 13,450 to 16,975; and all others from 10,400 to 10,560.

Building and engineering construction continues to make a favorable comparison with activity a year ago, due in large measure to public works projects, but dullness in railroad steel buying is having an adverse effect on heavy rolled products. Demand for plates, shapes and rails is lagging far behind that for sheets and strip. Bars are in a relatively better position, being aided by needs of the automotive industry and miscellaneous consumers, as well as by a moderate pickup in farm equipment building.

Few inquiries for rails and equipment are active, while miscellaneous steel purchases by railroads also are restricted. Wheeling & Lake Erie is in the market for 400 hopper cars, while 50 freight cars are pending for the navy. Illinois Central is expected to build 1000 cars in its own shops, in addition to 1000 ordered a few weeks ago.

Heavy Backlogs Confined Mostly to Sheets, Strip

Except in sheets and strip, backlogs of steel producers are relatively small. Consumers are content to order for only a short distance ahead, and mills are able to make fairly early shipment. Deliveries on some grades of flat-rolled steel, however, extend through the remainder of the quarter.

Little intimation is given by producers regarding possible price changes next quarter. Pending a further improvement in business there appears at the moment a disposition to let quotations stand, despite unfavorable earnings of the industry.

Pittsburgh and Chicago districts provided most of the 1.5-point increase in the national steelmaking rate last week to 63 per cent. A year ago the rate was 35 per cent and headed downward. Pittsburgh operations rose 4 points to 52 per cent; Chicago was up 2 points to 60 per cent; Cleveland increased 2.5 points to 79.5; Wheeling gained 2 points to 66; New England rose 8 points to 80; and eastern Pennsylvania was 1 point higher at 36.

Except for a 6-point drop at Youngstown to 60 per cent other districts were unchanged, including Buffalo at 49 per cent, Birmingham at 68, Cincinnati at 75, St. Louis at 51.5 and Detroit at 82.

Scrap is stronger in all markets and advances in several districts raise the steelworks scrap composite 50 cents to $14.79, while the iron and steel composite is up 6 cents to $36.35. The finished steel composite is unchanged at $56.50.

COMPOSITE MARKET AVERAGES

	Nov. 19	Nov. 12	Nov. 5	One Month Ago Oct., 1938	Three Months Ago Aug., 1938	One Year Ago Nov., 1937	Five Years Ago Nov., 1933
Iron and Steel	$36.35	$36.29	$36.56	$36.48	$36.50	$38.96	$30.25
Finished Steel	56.50	56.50	57.20	57.04	57.20	61.70	49.20
Steelworks Scrap..	14.79	14.29	14.29	14.00	14.44	13.32	9.64

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Nov. 19, 1938	Oct. 1938	Aug. 1938	Nov. 1937
Steel bars, Pittsburgh	2.25c	2.25c	2.25c	2.45c
Steel bars, Chicago	2.25	2.25	2.25	2.50
Steel bars, Philadelphia	2.57	2.57	2.57	2.74
Iron bars, Terre Haute, Ind.	2.15	2.15	2.15	2.35
Shapes, Pittsburgh	2.10	2.10	2.10	2.25
Shapes, Philadelphia	2.215	2.215	2.215	2.455
Shapes, Chicago	2.10	2.10	2.10	2.30
Plates, Pittsburgh	2.10	2.10	2.10	2.25
Plates, Philadelphia	2.15	2.15	2.15	2.435
Plates, Chicago	2.10	2.10	2.10	2.30
Sheets, hot-rolled, Pittsburgh	2.15	2.10	2.15	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.15	3.20	3.55
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.50	3.80
Sheets, hot-rolled, Gary	2.15	2.10	2.15	2.50
Sheets, cold-rolled, Gary	3.20	3.15	3.20	3.65
Sheets, No. 24, galv., Gary	3.50	3.50	3.50	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.90
Tin plate, per base box, Pitts.	$5.00	$5.35	$5.35	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.45	2.75

Semifinished Material

Sheet bars, open-hearth, Youngs.	$34.00	$34.00	$34.00	$37.00
Sheet bars, open-hearth, Pitts.	34.00	34.00	34.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	43.00	47.00

Pig Iron

	Nov. 19, 1938	Oct. 1938	Aug. 1938	Nov. 1937
Bessemer, del. Pittsburgh	$22.34	$22.34	$21.34	$25.26
Basic, Valley	20.50	20.50	19.50	23.50
Basic, eastern, del. Philadelphia	22.34	22.34	21.34	25.26
No. 2 foundry, Pittsburgh	22.21	22.21	21.21	25.21
No. 2 foundry, Chicago	21.00	21.00	20.00	24.00
Southern No. 2, Birmingham	17.38	17.38	16.38	20.38
Southern No. 2, del. Cincinnati	20.89	20.89	19.89	23.89
No. 2X, Del. Phila. (differ. av.)	23.215	23.215	22.215	26.135
Malleable, Valley	21.00	21.00	20.00	24.00
Malleable, Chicago	21.00	21.00	20.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	28.34	30.14
Gray forge, del. Pittsburgh	21.17	21.17	20.17	24.17
Ferromanganese, del. Pittsburgh	97.77	97.77	97.77	107.35

Scrap

Heavy melting steel, Pittsburgh	$15.50	$14.95	$15.20	$14.10
Heavy melt. steel, No. 2, E. Pa.	12.75	12.95	13.00	12.25
Heavy melting steel, Chicago	14.50	13.05	14.00	12.55
Rails for rolling, Chicago	17.25	16.25	18.25	15.10
Railroad steel specialties, Chicago	16.25	15.55	16.75	16.75

Coke

Connellsville, furnace, ovens	$ 3.75	$3.75	$3.75	$4.37
Connellsville, foundry, ovens	5.00	5.00	5.00	5.25
Chicago, by-product fdry., del.	10.50	10.50	10.50	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.15c
Chicago, Gary	2.15c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown, O.	2.15c
Youngstown, O.	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh	3.20c
Chicago, Gary	3.20c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown, O.	3.20c
Youngstown, O.	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Tin Mill Black Plate

Pittsburgh	3.15c
Chicago, Gary	3.15c
Granite City, Ill.	3.25c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chgo.	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New Cork, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c
Pacific coast points	2.70c

Iron

Terre Haute, Ind.	2.15c
Chicago	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt.	2.05c
Detroit, delivered	2.15c
Gulf ports	2.40c
Pacific coast ports, f.o.b. car docks	2.50c
Philadelphia, del.	2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham	1.90c
Detroit, delivered	2.00c
Gulf ports	2.25c
Pacific Coast	2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.45
Cement coated nails	$2.45

(Per pound)

Polished staples	3.15c
Galv. fence staples	3.40c
Barbed wire, galv.	3.20c
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut nails, C. L. Pitts. (10% disc. on all extras) $3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

* Delivered.

Alloy Bars (Hot)

(Base, 3 to 25 tons)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.80c

Detroit, delivered 2.90c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.55

4600 0.20 to 0.30 Mo. 1.50-2.00 Ni. 1.10

5100 0.80-1.10 Cr. 0.45

5100 Cr. spring flats 0.15

6100 bars 1.20

6100 spring flats 0.85

Cr. N., Van. 1.50

Carbon Van. 0.85

9200 spring flats 0.15

9200 spring rounds, squares 0.40

Electric furnace up 50 cents.

Piling

Pittsburgh	2.40c
Chicago, Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot strip to 23⅛-in.

Pittsburgh, Chicago, Gary, Cleveland Youngstown, Middletown, Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Youngs., Pitts., Chicago, Birm.	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c
Worcester, Mass.	3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass., $4 higher.

Commodity Cold-Rolled	Strip
Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$40.00
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00

Cents per pound

Angle bars, billet, mills	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chgo., B'ham.	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller ..65-5-5 off

Do. larger, to 1-in. 60-10-5 off

Do. 1⅛ and larger 60-5-5 off

Tire bolts .....50-5 off

Stove Bolts

In packages with nuts attached 75 off; in packages with nuts separate 75-12½ off; bulk 85 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts .....50-10-5-5 off

Elevator bolts ....50-10-5-5 off

Plow bolts .....65-5-5 off

Nuts

Semifinished hex. U.S.S.	S.A.E.
¼-$\frac{7}{16}$-in., incl.	65-10 70-5
½-$\frac{7}{16}$-in., incl.	65-5 70
⅝-1-in., incl.	60-10 65
1⅛ and larger	60-5 60-5

Hexagon Cap Screws

Milled .....50-10-5 off

Upset, 1-in. smaller..67½-10 off

Square Head Set Screws

Upset, 1-in., smaller..75-10 off

Headless set screws....70-10 off

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago	3.40c
$\frac{7}{16}$-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers	

and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off

Do., less carloads, 5 kegs or more, no discount on any extras $3.90

Do., under 5 kegs no disc. on any extras $4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In.	Blk.	Galv.
½	63½	54
¾	66½	58
1—3	68½	60½

Iron

¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B Stnd. fitgs., Birm., base $100.00.

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Clev., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅜-inch incl.	43.00
Do., over ⅜ to $\frac{11}{64}$-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	5.75c

Per ton, bulk, f.o.b. port

Sulphate of ammonia	$27.50

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.75	23.25	22.25	23.75
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:

Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.87	.....	.....	.....
Boston from Everett, Mass.	23.25	23.75	22.75	24.25
Boston from Buffalo	23.25	23.75	22.75	24.25
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birmingham	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.44	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	21.50	21.50	21.00	.....
St. Louis from Birmingham	†21.12	.....	20.62	.....
St. Paul from Duluth	23.63	23.63	.....	24.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $26.50, Phil, base, standard and copper bearing, $27.63.

Gray Forge		Charcoal	
Valley furnace	$20.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	20.50	do., del. Chicago	28.34
		Lyles, Tenn.	23.50

Silvery†

Jackson count, O., base: 6-6.50 per cent $25.50; 6.51-7—$26.00; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 8.51-9—$28.00; 9-9.50—$28.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $92.50
Do., del. Pittsburgh 97.77

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., New Orleans 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman, 2½ carbon 97.75
2% carbon 102.75 1% 112.75
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.50c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40%, lb. con. ti., ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-55%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract carloads, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.05
Do, smaller lots 2.15

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c

88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, lb. 14.50c
Do, 2% 13.00c
Spot ¼c higher

Silicon Briquets, contract, carloads, freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, freight allowed lb. 4.75c
Ton lots 5.25c
Less-ton lots 5.50c
Spot ¼c higher

Zirconium Alloy, 12-15%, carloads, gross ton $97.50
Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.76
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.40
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.50
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.62
Detroit	3.68	3.83	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	3.82	3.82	3.80	3.83	5.43	3.57	....	4.57
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.30	4.30	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.01	4.16	4.16	3.96	3.96	5.71	3.91	....	5.26
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	....	5.15
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	4.20	....	5.25
Seattle	4.30	4.50	5.85	4.05	4.15	5.90	4.20	....	5.50
Portland, Oreg.	4.30	4.70	6.10	4.15	4.15	5.90	3.75	6.50	4.75
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	3.85	3.95	5.45	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE: Cold Drawn Bars 2300	SAE: Cold Drawn Bars 3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	....	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	....	....	....	....	....	....
Norfolk, Va.	....	4.60	....	....	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	4.10	3.83	7.57	6.17	5.92	7.39	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.64	4.00	7.60	6.20	8.79	9.34	8.94	7.54
Milwaukee	....	4.18	3.93	7.48	6.08	5.83	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.60	....	....	....	....	....	....	....
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	....	4.90	....	....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
Los Angeles	4.45	6.60	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

* Based on minimum quantity.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Nov. 17

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports	£ s d	Quoted in dollars at current value	Continental Channel or North Sea ports, gross tons: **Quoted in gold pounds sterling	£ s d
Foundry, 2.50-3.00 Si.	$25.86	5 10 0	$17.60		2 2 0
Basic bessemer	....	....	16.13		1 18 6
Hematite, Phos. .03-.05	30.62	6 10 0*	.....		.....
Billets	$37.09	7 17 6	$41.90		5 0 0
Wire rods, No. 5 gage	53.11	11 5 6	42.95		5 2 6
Standard rails	$47.69	10 2 6	$48.19		5 15 0
Merchant bars	2.31c	11 0 0	1.95c to 2.00c	5 2 6 to 5 5 0	
Structural shapes	2.23c	10 12 6	1.85c		4 17 6
Plates, †¼ in. or 5 mm.	2.43c	11 11 3	2.14c to 2.33c	5 12 6 to 6 2 6	
Sheets, black, 24 gage or 0.5 mm.	2.73c	13 0 0	2.95c		7 15 0°
Sheets, gal., 24 ga., corr.	3.31c	15 15 0	3.52c		9 5 0
Bands and strips	2.78c	13 5 0	2.00c		5 5 0
Plain wire, base	4.10c	19 10 0	2.33c to 2.76c	6 2 6 to 7 5 0	
Galvanized wire, base	4.88c	23 5 0	2.99c to 3.09c	7 17 6 to 8 2 6	
Wire nails, base	3.89c	18 10 0	2.66c to 2.85c	7 0 0 to 7 10 0	
Tin plate, box 108 lbs.	$ 4.77	1 0 3	.....	.....	

British ferromanganese $92.50 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Reic Mark
Fdy. pig iron, Si. 2.5	$25.67	5 9 0(a)	$15.79	598	$16.90	500	$25.24	63
Basic bess. pig iron	23.55	5 0 0(a)	.....	...	.....	...	27.85(b)	69.50
Furnace coke	6.48	1 7 6	5.41	205	7.27	215	7.61	19
Billets	37.09	7 17 6	22.18	840	29.07	860	38.67	96.50
Standard rails	2.13c	10 2 6	1.38c	1,150	2.06c	1,375	2.38c	132
Merchant bars	2.56c	12 4 0††	1.30c	1,080	1.65c	1,100	1.98c	110
Structural shapes	2.32c	11 0 6††	1.27c	1,055	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5 mm.	2.46c	11 14 3††	1.62c	1,350	2.06c	1,375	2.29c	127
Sheets, black	3.31c	15 15 0§	1.92c	1,600‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.89c	18 10 0	2.70c	2,250	4.13c	2,750	6.66c	370
Plain wire	4.10c	19 10 0	1.98c	1,650	2.48c	1,650	3.11c	173
Bands and strips	2.72c	12 19 0††	1.45c	1,210	1.95c	1,300	2.29c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 72 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	†12.00
Bos. dock No. 1 exp.	13.00-13.25
New Eng. del. No. 1	13.00
Buffalo, No. 1	14.00-14.50
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	14.25-14.75
Chicago, auto, no alloy	13.25-13.75
Chicago, No. 2 auto	11.50-12.00
Cincinnati, dealers	11.50-12.00
Cleveland, No. 1	13.50-14.00
Cleveland, No. 2	12.50-13.00
Detroit, No. 1	9.50-10.00
Detroit (industrial)	10.75-11.25
Eastern Pa., No. 1	14.50-15.00
Eastern Pa., No. 2	12.50-13.00
Federal, Ill.	12.25-12.75
Granite City, R. R.	13.00-13.50
Granite City, No. 2	12.00-12.50
Los Angeles, No. 1	13.50-14.00
Los Angeles, No. 2	12.50-13.00
N. Y. dock No. 1 exp.	11.50-12.00
Pitts., No. 1 (R. R.)	15.75-16.25
Pittsburgh, No. 1	15.25-15.75
Pittsburgh, No. 2	14.25-14.75
St. Louis, R. R.	13.25-13.75
St. Louis, No. 2	12.25-12.75
San Francisco, No. 1	12.00
Seattle, No. 1	10.00-12.00
Toronto, dirs. No. 1	10.00-11.00
Valleys, No. 1	14.50-15.00

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	13.50-14.00
Chicago, dealer	12.75-13.25
Cincinnati, del.	10.25-10.75
Cleveland	13.00-13.50
Detroit	11.75-12.25
E. Pa., new mat.	14.50-15.00
E. Pa., old mat.	10.50-11.00
Los Angeles	12.50-13.00
Pittsburgh	15.25-15.75
St. Louis	11.00-11.50
Valleys	14.00-14.50

BUNDLED SHEETS

Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Cleveland	10.00-10.50
Los Angeles	14.00
Pittsburgh	14.25-14.75
St. Louis	8.00- 8.50
Toronto, dealers	4.00

SHEET CLIPPINGS, LOOSE

Chicago	9.00- 9.50
Cincinnati, dealers	6.25- 6.75
Detroit	8.25- 8.75
†Los Angeles	3.75- 4.00
St. Louis	7.50- 8.00

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	13.00-13.50
Cincin., No. 1, deal.	6.50- 7.00
Cincinnati, No. 2	3.25- 3.75
Cleveland, No. 2	7.25- 7.75
Detroit, No. 1, new	10.00-10.50
Valleys, new, No. 1	13.50-14.00
Toronto, dealers	4.00

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	7.00- 7.50
Chicago	7.75- 8.25
Cincinnati, dealers	4.00- 4.50
Cleveland	7.00- 7.50
Detroit	5.50- 6.00
Eastern Pa.	8.50- 9.00
Los Angeles	4.00- 4.25
New York	†3.50- 4.00
Pittsburgh	9.50-10.00
St. Louis	5.00- 5.50
Toronto, dealers	4.25- 4.75
Valleys	8.50- 9.00

SHOVELING TURNINGS

Buffalo	8.50- 9.00
Cleveland	7.50- 8.00
Chicago	9.00- 9.50
Detroit	6.50- 7.00
Pittsburgh	10.50-11.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	7.25- 7.50
Cincinnati, dealers	3.50- 4.00
Cleveland	7.50- 8.00
Eastern Pa.	6.50- 7.00
Detroit	5.50- 6.00
New York	†2.50- 3.00
Pittsburgh	8.25- 9.75
Toronto, dealers	3.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	14.00-14.50
East. Pa., elec. fur.	13.00-13.50
St. Louis	9.00- 9.50
Toronto	5.00

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†6.00- 6.25
Buffalo	8.00- 8.50
Chicago	5.50- 6.00
Cincinnati, dealers	3.50- 4.00
Cleveland	7.25- 7.75
Detroit	5.50- 6.00
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.00- 3.00
Toronto, dealers	3.50

RAILROAD SPECIALTIES

Chicago	16.00-16.50

ANGLE BARS—STEEL

Chicago	16.00-16.50
St. Louis	15.00-15.50

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.50-17.00
Chicago, leaf	16.00-16.50
Eastern Pa.	16.50-17.00
Pittsburgh	16.75-17.25
St. Louis	15.00-15.50

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	17.00-17.50
Chicago (3 ft.)	16.50-17.00
Chicago (2 ft.)	17.00-17.50
Cincinnati, dealers	16.25-16.75
Detroit	16.50-17.00
Los Angeles	15.00-17.50
Pitts., 3 ft. and less	16.75-17.25
St. Louis, 2 ft. & less	15.00-15.50

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.50-15.00
Cleveland	17.00-17.50
Pittsburgh	16.25-16.75
St. Louis	14.00-14.50
Seattle	16.00

FROGS, SWITCHES

Chicago	14.25-14.75
St. Louis, cut	14.25-14.75

ARCH BARS, TRANSOMS

St. Louis	14.50-15.00

PIPE AND FLUES

Cincinnati, dealers	6.50- 7.00
Chicago, net	9.00- 9.50

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	9.00- 9.50
Cincinnati, dealers	6.75- 7.25
Eastern Pa.	13.50
New York	†8.50- 9.00
St. Louis	8.50- 9.00

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	15.00-15.50
St. Louis, No. 1	10.75-11.25
St. Louis, No. 2	13.00-13.50
Toronto, No. 1 dlr.	10.00

FORGE FLASHINGS

Boston district	†7.25- 7.50
Buffalo	12.00-12.50
Cleveland	11.50-12.00
Detroit	9.25- 9.75
Los Angeles	9.00
Pittsburgh	14.00-14.50

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	16.50-17.00
Pitts., billet, bloom, slab crops	18.50-19.00

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.00-16.50
Eastern Pa.	17.00-17.50
Pittsburgh	17.25-17.75
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.00-17.50
New York	†15.00-15.50
Eastern Pa.	17.00-17.50
St. Louis	19.00-19.50

STEEL CAR AXLES

Birmingham	†15.00-16.00
Buffalo	16.50-17.00
Boston district	†16.00
Chicago, net	19.00-19.50
Eastern Pa.	21.50-22.50
St. Louis	18.50-19.00

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	13.50-14.00

SHAFTING

Boston district	†14.75-15.00
New York	†15.00-15.50
Eastern Pa.	19.50-20.00
St. Louis, 1¼-3¾"	17.00-17.50

CAR WHEELS

Birmingham	†13.50-14.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	14.00-14.50
Chicago, rolled steel	15.50-16.00
Cincin., iron, deal.	13.50-14.00
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	16.50-17.00
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	16.75-17.25
St. Louis, iron	14.50-15.00
St. Louis, steel	15.00-15.50

NO. 1 CAST SCRAP

Birmingham	†12.50-13.00
Boston, No. 1 mach.	†11.00-11.50
N. Eng. del. No. 2	11.50-12.00
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.50-15.00
Buffalo, mach.	15.50-16.00
Chicago, agri. net	11.00-11.50
Chicago, auto net	12.50-13.00
Chicago, railr'd net	11.50-12.00
Chicago, mach. net	12.50-13.00
Cincin., mach. deal.	12.75-13.25
Cleveland, mach. net	16.75-17.25
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	14.00-14.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.25-15.75
San Francisco, del.	13.50-14.00
Seattle	10.00-12.00
St. Louis, cupola	12.50-13.00
St. L., No. 1 mach.	14.00-14.25
St. L., agr. mach.	12.75-13.25
Toronto, No. 1, mach., net	11.00-12.00

HEAVY CAST

Boston dist. break.	†10.75-11.00
New England, del.	12.50-13.00
Buffalo, break.	11.00-11.50
Cleveland, break. net	13.00-13.50
Detroit, auto net	11.50-12.00
Detroit, break	9.50-10.00
Eastern Pa.	16.00
Los Ang., auto, net	13.00-13.50
New York, break.	†11.50-12.00
Pittsburgh, break.	13.25-13.75

STOVE PLATE

Birmingham	†7.50- 8.00
Boston district	†8.00- 8.25
Buffalo	13.00-13.50
Chicago, net	8.50- 9.00
Cincinnati, dealers	6.75- 7.25
Detroit, net	8.50- 9.00
Eastern Pa.	13.50
New York, fdy.	†10.00-10.50
St. Louis	8.00- 8.50
Toronto dealers, net	7.50- 8.00

MALLEABLE

Birmingham, R. R.	†10.50-11.00
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	15.00-15.50
Cincin., agri. deal.	11.50-12.00
Cleveland, rail	15.00-15.50
Eastern Pa., R. R.	15.50-16.00
Los Angeles	17.50-18.00
Pittsburgh, rail	14.25-14.75
St. Louis, R. R.	12.00-12.50

Iron Ore

Lake Superior Ore

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	13.00
Swedish low phos.	13.00
Spanish No. Africa basic, 50 to 60% nom.	9.00
Tungsten, sh. ton. unit, duty pd. nom.	$21.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	30.00-32.00
So. African, 50-52% nom.	30.00-32.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 72

Pittsburgh—Production of common and full-finished sheets has passed 60 per cent for the first time in more than a year and some makers continue to run full. Deliveries are lagging as a result of extensive backlogs, and sustained operations are in prospect for the remainder of the quarter. Galvanized sheet buying by industrial consumers has moderated slightly, but a seasonal letdown in jobbers' orders primarily is responsible for a further drop in production to 61 per cent. Sheet prices are firm, but there is little expectation of an increase shortly, barring an unforeseen expansion in demand.

Cleveland—Automotive interests are said to have contracted for enough sheet tonnage to satisfy their needs the remainder of this quarter at least, although some fill-in buying of small lots may develop. Other consumers, such as stove, radio and refrigerator makers, also are well covered for the immediate future. Sheet mill operations remain close to capacity.

Chicago—Sheet production is increasingly heavy here, accounting for a large share of recent steelmaking gains. Sales are expected to tend upward the remainder of this month.

Boston—Sheet orders are heavier than expected. Practically all finishes are included while shipments to district consumers and distributors are well sustained. Consumption has stepped up slightly, with most stamping and sheet metal shops more active. New orders are coming largely from consumers who failed to buy during the recent spurt plus scattered supplemental buying by jobbers.

New York—Sheet activity is expanding, releases against old orders being heavier and new orders larger than was expected. The latter is attributed to the fact that a number of buyers under-estimated their needs when covering ahead a few weeks ago. Jobbers are issuing better releases as a result of steady gains in orders for small lots out of warehouse. Mill deliveries are extending, some sellers being unable to make shipment on any major grades of sheets for 30 days.

Philadelphia—Body and frame plants are operating at capacity, and sheet releases are substantial. Galvanized sheets are moving well to jobbers and makers of roofing products. Prices are surprisingly firm.

Buffalo—Some inquiries are appearing from smaller buyers, but larger consumers generally are covered for the rest of the quarter. Releases against orders are maintaining fairly active production.

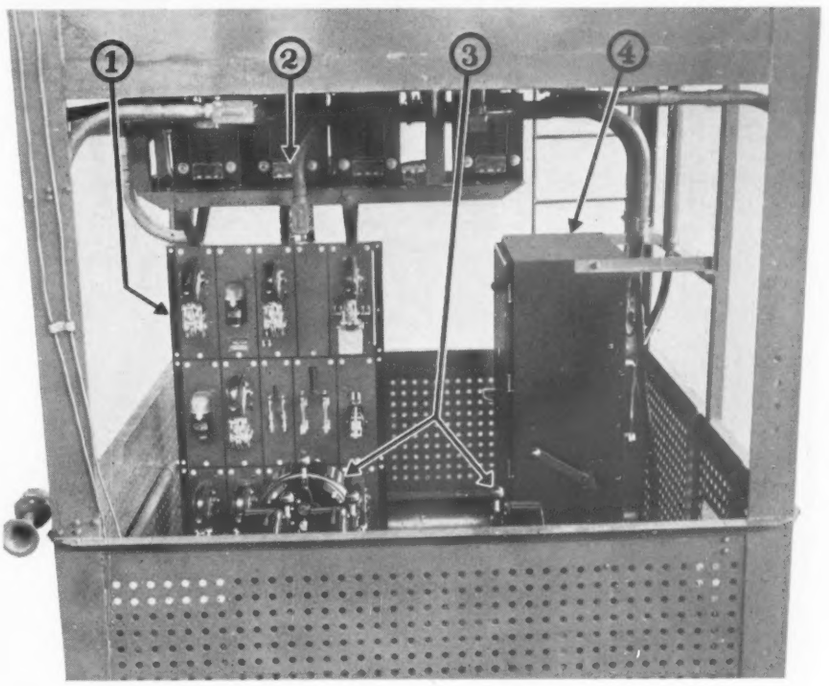
St. Louis—New sheet business is better than expected, with shipments well sustained. Enameling stock continues the most active grade, although specifications from stovemakers have declined somewhat. Some consumers find they underestimated sheet requirements for the quarter during the recent period of forward buying.

Cincinnati—Automotive needs account for most of recent gains in sheet releases, but most other consumers also are taking larger lots. Demand from makers of household specialties, including stoves, radios and refrigerators is seasonally heavy. Backlogs, augmented by a fair volume of new business, assure maintenance of sheet production the remainder of the year.

Birmingham, Ala.—Already at virtually full output, production of sheets shows no sign of tapering. Inquiries and spot orders continue steady and it is probable some business will be carried over into 1939.

Another Installation of

EC&M HEAVY DUTY CRANE CONTROL



• Operator's Cab of Alliance Man-Trolley 90-Ton Crane

1— EC&M WRIGHT DYNAMIC LOWERING CIRCUIT HOIST CONTROLLER makes it possible to inch down the load on the crane hook because of instantaneous brake release since with this system of control, the brake is not in the divided circuit in the lowering direction.

2— EC&M NICKEL ALLOY RESISTORS have high heat-radiating capacity and proven ability to withstand shock and vibration.

3— EC&M Type NT MASTER SWITCHES permit convenient grouping and respond easily as the crane operator moves from one point of speed control to the next one.

4— EC&M LINE-ARC CRANE PROTECTIVE PANEL guarantees protection against accidental starts by means of low voltage protection and also serves as a convenient disconnect to stop all motors either in an emergency or when shutting down the crane for repairs or inspection.

THE ELECTRIC CONTROLLER & MFG. CO. E&M CLEVELAND, OHIO

HEAVY DUTY MOTOR CONTROL FOR CRANES, MILL DRIVES AND MACHINERY • BRAKES • LIMIT STOPS • LIFTING MAGNETS AND AUTOMATIC WELD TIMERS

When buying Cranes, Specify E C & M Control

Strip

Strip Prices, Page 73

Pittsburgh—Strip production has been increased further, output recently being around 55 per cent for hot mills and slightly higher for cold strip. Sustained schedules are in prospect for the near future.

Boston—Narrow cold strip buying is well maintained. Heavier consumption is indicated by advanced shipping releases on old business. Miscellaneous demand is sustained, aided by substantial orders from household appliance and typewriter manufacturers. Automotive business is encouraging, with high carbon stock relatively most active. Rerollers in most instances are operating better than 70 per cent. Prices are firm.

New York—Narrow cold strip buying has made further gains, with improvement maintained notably on high carbon. Shipments of low carbon bought during the price weakness several weeks ago are heavy. Consumption has increased in several of the larger consuming industries and the bulk of current business appears to be for immediate needs. Prices are now firm.

Birmingham, Ala.—Strip production continues on a greatly diminished scale with local mills arranging output only for stocks mostly in cotton ties.

Inland Created Ledloy

to Save Machining Costs

—and Here Are Some Typical Results

An Automotive Parts Maker

"Using Inland Cold Finished Ledloy, we were able to reduce our machining time on automatic parts from 11 seconds to 3½ seconds. The machine finish obtained with Inland Ledloy is excellent."

Household Utilities Manufacturer

"We are now using Inland Cold Finished Ledloy for a part formerly made of SAE X-1315. It has increased our rate of production 45%. Results from heat-treatment are also completely satisfactory."

Conveyor Equipment Manufacturer

"We are using Inland Cold Finished Ledloy 1115 on a screw machine job that is threaded the entire length of the bar. Formerly we used SAE X1112 for this part. Inland Ledloy is saving us $12.50 per ton in direct labor cost alone. We could not afford to pass up this attractive economy."

Ledloy has the same characteristics as any other open hearth steel except for its greatly increased machinability. Order cold finished Ledloy from leading cold drawing concerns and hot rolled forms from Inland.

INLAND STEEL CO.

38 South Dearborn Street, Chicago

Sheets Strip Tin Plate Bars Plates Reinforcing Bars Floor Plates Structurals Piling Rails Track Accessories

Plates

Plate Prices, Page 72

Cleveland—Plate shipments are moderately heavier than a month ago, with better inquiries appearing from boiler, tank and industrial equipment fabricators. St. Louis-San Francisco railroad has decided to build five locomotives in its own yards. Orders for 2877 tons of fabricated parts for the Chesapeake & Ohio repair program involving 870 cars have been distributed among various suppliers.

Chicago—Plate business is fairly active. Several large public projects are in prospect and will take substantial plate tonnages. Tank plates are in lighter demand, but other fabricating requirements are tending upward.

Boston—Large diameter steel pipe and increasing navy yard requirements mark expanding demand for plates. Miscellaneous business also is tending upward but without support from railroad shops. Boiler and structural fabricators find business spotty and are covering accordingly.

New York — While plate consumers appear to have fairly substantial tonnages under contemplation and sentiment generally is improved, actual orders continue to come out slowly. In some cases it appears as if the year-end inventory season is having some bearing on the reluctance of buyers to place orders at this time. Utilities companies are talking more optimistically, but little real business has yet developed.

Philadelphia—Releases and new business show little change, with production receiving best support from shipyard demand. Business in high-pressure boilers is slow but substantial buying for the navy is anticipated. Inquiries for other types of pressure vessels is slightly more active. Oil industry demand is in small lots. A York, Pa., interest has placed 200 tons of plates for gun mounts.

Birmingham, Ala.—Production of plates is expected to continue at the present satisfactory level during the remainder of the year if for no other reason than railroad car business already placed. Additional bookings,

mostly in scattered lots, however, are being received in sufficient volume to provide some backlog for next year.

San Francisco — For construction of the destroyer, USS TUNA, at the Mare Island, Calif., navy yard, bids will be opened in Washington, Nov. 22 under schedule 4892 for 1280 tons of plates, sheets and strip and Nov. 25 for 1504 tons of plates, sheets and strip, schedule 4897, for the construction of the destroyer USS MONSSEN at the navy yard, Bremerton, Wash. Other business is confined to small lots. To date this year 38,382 tons have been placed, compared with 59,952 tons for the corresponding period in 1937.

Seattle—Tank and boiler work is at a low ebb and shops expect little improvement before next year. Two water projects at Leavenworth and Cle Elum, involving 720 tons, are among major pending items.

Plate Contracts Placed

145 tons, 1,000,000-gallon welded steel standpipe, 48 x 75 feet, Ambler, Pa., to Chicago Bridge & Iron Co., Chicago.

100 tons, 200,000-gallon elevated tank, Northampton, Mass., to Pittsburgh-Des Moines Steel Co., Pittsburgh, $17,750; bids Nov. 14.

Plate Contracts Pending

3706 tons, plates, sheets, strip, for two destroyers, navy yard, Boston; bids Nov. 25.

250 tons, estimated welded steel standpipe, 66 x 100 feet, Washington Suburban Sanitary district, Washington, contract 2, proposal No. MD-1145-F; bids Nov. 9 to Graver Tank & Mfg. Co., East Chicago, Ind., $50,548.

100 tons, 270 special class welded can and nun buoys, bids Dec. 5, and 22 steel buoy bodies of larger type, welded and riveted, bids Dec. 6, supt. of lighthouses, Staten Island, New York.

Bars

Bar Prices, Page 72

Cleveland — Auto partsmakers have furnished most of the improvement in commercial and alloy bar demand lately. Shipments so far this month are about equal to the rate the first half of October. Mill deliveries are obtainable within a week to ten days, inducing consumers to order for only early needs. Specifications from machine tool builders are heavier, with further gains in sight.

Chicago — Carbon and alloy bar demand here is characterized as quite good. Continued improvement in bookings is furnished largely by the automotive industry, although farm equipment building is supplying larger tonnages. Tractor production has increased, gains being noted in both farm and industrial types.

Boston—Moderate improvement in commercial bar sales continues. Miscellaneous outlets account for sustained demand, while textile equipment makers are placing slightly better orders for cold-finished material. Forging bars are more active. Buying generally is closely attuned to the rising trend of consumption.

New York—Commercial bar tonnage continues to expand gradually. Orders are diversified, but automotive and government requirements are outstanding. These latter requirements, in particular, include substantial tonnages of cold drawn and alloy bars. Shipbuilding specifications are well sustained, with favorable prospects for continued good business. Lack of important railroad buying, however, is being seriously felt.

Philadelphia — Demand is moderately active, with warehouses accounting for a substantial portion of total business. Warehouses are holding down inventories and commitments represent necessary replacements. Textile equipment

32 years
1906-1938
Dependable
. . SERVICE
. . QUALITY

DAMASCUS MANGANESE AND ALLOY CASTINGS

Manganese and Alloy Steel Castings One Half to One Thousand Pounds Produced in our modernly equipped foundry from electric furnace steel and heat-treated in automatically controlled gas-fired furnaces.

DAMASCUS STEEL CASTING CO.
New Brighton, Pa.
(Pittsburgh District)

builders and auto partsmakers are outstanding among consuming demand.

Buffalo—Bar demand is steady. Fair size tonnages are moving to automotive interests, but miscellaneous users account for most business. Government projects are a sales stimulant, while little railroad buying is appearing.

Birmingham, Ala.—Concrete bars, currently being produced at approximately 60 per cent, continue to form the backbone of the bar business. Most of the output is going into highway and miscellaneous building construction.

Pipe

Pipe Prices, Page 73

Pittsburgh—Pipe production and orders are steady despite some seasonal letdown in standard pipe demand. Mechanical and pressure tubing, however, are more active. Oil country goods are slow, with pipe line business limited principally to feeder lines.

Cleveland—The largest of steel pipe contracts is 1000 tons of 42-inch for the Sandusky, O., intake, placed with Taylor Forge & Pipe Works, Chicago. Steel & Tubes Inc. division of Republic Steel Corp. is reported to have booked 2,000,000 feet of tubing for the federal reclamation department, involving about 700 tons. Pipe shipments by jobbers has increased moderately so far this month. Cast pipe demand is fairly active and the outlook encouraging.

Boston—Cast pipe buying has increased sharply, following closing of bids on about 3000 tons. Purchases include 320 tons for the procurement division, Boston, while Lawrence and Lincoln, Mass., and Sanbornville, N. H., have placed substantial orders. Small lot buying of steel pipe is slightly more active.

New York—Outstanding in cast pipe inquiries is 1100 tons, including fittings, for the Green Haven, N. Y., prison. Buying is in small lots. New York city is expected to ask bids on nearly 9000 tons before the end of the month. Export business with South America is less active.

Birmingham, Ala. — Pipe plants are booking good tonnages. National Cast Iron Pipe Co. and American Cast Iron Pipe Co. have increased production schedules with award of 1710 tons from the Pacific Coast for 6 and 8-inch pipe. Production schedule is better than 50 per cent with many small lettings in immediate prospect.

Seattle—Pending business is not impressive but several important contracts are to be up for bids soon. Soule & Walters, Elma, Wash., are low at $17,925 for a water district improvement at Rogue River, Oreg., and William & Van Valkenburgh are low at $29,482 for replacement of water mains at Jacksonville, Oreg. Westport, Wash., has received a $42,000 grant toward a $77,385 dam project involving 8½ miles of 10-inch main and 4-inch distributing pipe.

Cast Pipe Placed

315 tons, 12-inch, procurement division, treasury department, Boston, to Donaldson Iron Works, Emaus, Pa.

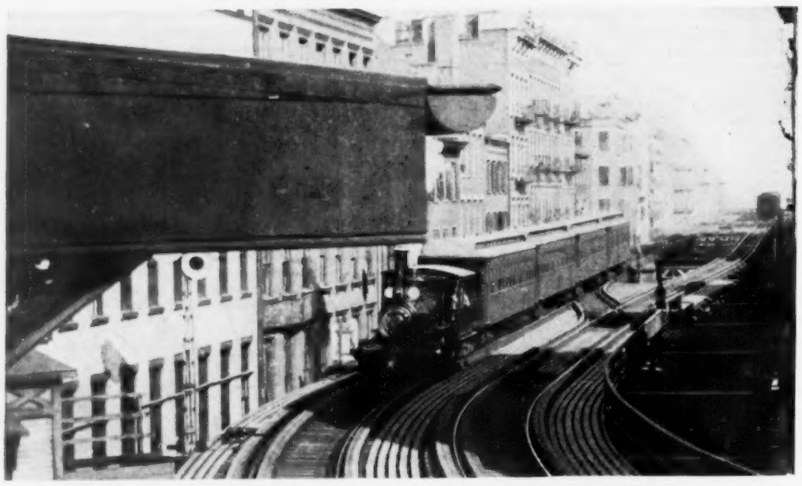
100 tons, 10-inch, Mount Vernon, N. Y., to Donaldson Iron Works, Emaus, Pa.

Steel Pipe Placed

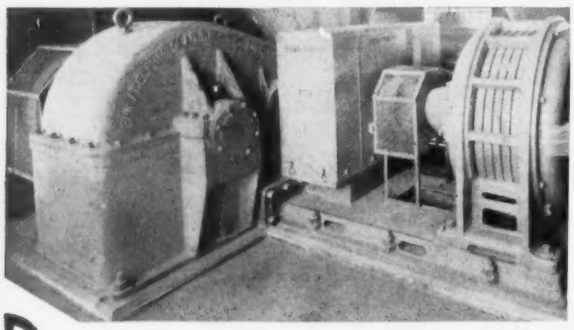
1000 tons, 42-inch, intake, Sandusky, O., to Taylor Forge & Pipe Works, Chicago; through Thatcher Bros., Toledo, O.

700 tons, 2,000,000 feet of 1-inch O. D., for reclamation bureau, Washington,

Is your POWER TRANSMISSION EQUIPMENT as obsolete as this wood-burning "El" of the '80's?



In many industrial plants the devices used for transmitting power have not kept abreast with the adoption of the newer developments in production machinery. A check-up in your shop may show the need for modern Philadelphia Speed Reducing Units. Since they are available in every possible type, there's not a drive in your set-up that cannot be efficiently, economically and safely transmitted through Philadelphia Units. For example, on heavy duty work, where resistance to shock or frequent reversals must be met, the Philadelphia Herringbone Reducer acknowledges no equal. Let our engineers discuss your requirements with you. Their impartial recommendations will save you money.



Here is the modern drive

This Philadelphia Herringbone Unit operates a heavy conveyor. In its sturdy housing are the alloy steel gears with teeth that have been cut to split-hair accuracy. Bronze and roller bearings on the shafts assure long smooth running.

PHILADELPHIA HERRINGBONE *Speed Reducers*

Philadelphia Gear Works

Industrial Gears and Speed Reducers

Erie Avenue and "G" Street

PHILADELPHIA

to Steel & Tubes Inc., division of Republic Steel Corp., Cleveland.

Cast Pipe Pending

1255 tons, 4 to 12-inch, Hamilton, Mass.; bids Nov. 28.
1100 tons, various sizes and fittings, water system, Green Haven prison, New York; bids Nov. 22.
105 tons, 8 to 10-inch, Wolfeboro, N. H.; bids Nov. 29.

Steel Pipe Pending

220 tons, 8-inch pipe, line between Alcatraz Island and San Francisco; bids rejected.
150 tons, water distribution system, Amsterdam, O.; bids in.
150 tons, water distribution system, Ashland, O.; bids in.

Rails, Cars

Track Material Prices, Page 73

Inquiry by the Wheeling & Lake Erie for 400 all-steel 60-ton self-clearing hopper cars is an outstanding development in the railroad equipment market, the only new inquiry of size. The navy will open bids Dec. 2 on two box cars and two flat cars. These are in addition to the 46 freight cars on which bids were opened Nov. 1 and on which no action has yet been taken.

Magor Car Corp., Passaic, N. J., is low on 39 of these cars (50-ton flat cars); the Greenville Steel Car Co., Greenville, Pa., on four (box-cars); and Pressed Steel Car Co. on three (60-ton steel flat cars).

Illinois Central may build 1000 freight cars in its own shops, in addition to the 1000 recently contracted for with American Car & Foundry Co. on a lease-purchase basis. There have also been reports that the American Car & Foundry Co. may build these latter cars.

Chesapeake & Ohio has awarded 2877 tons of steel parts for repairs to 870 freight cars in its own shops. The business was distributed among a number of parts manufacturers.

Kansas City Terminal has placed three diesel locomotives, two with Electro-Motive Corp. and one with American Locomotive Co.

Locomotives Placed

Kansas City Terminal, three 900-horsepower diesel locomotives; two to Electro-Motive Corp., LaGrange, Ill., one to American Locomotive Co., New York.
Sorocabana Railway, Brazil, four meter-gage locomotives of the 4-10-2 type, to the American Locomotive Co., New York.
White Pass & Yukon Route, one 2-8-2 type, to Baldwin Locomotive Works, Eddystone, Pa.

Cars Pending

Navy, two box cars and two flat cars, bids Dec. 2; these are in addition to 46 freight cars on which bids were opened Nov. 1, and on which no action has yet been taken.
Wheeling & Lake Erie, 400 all-steel, 60-ton self-clearing hopper cars.

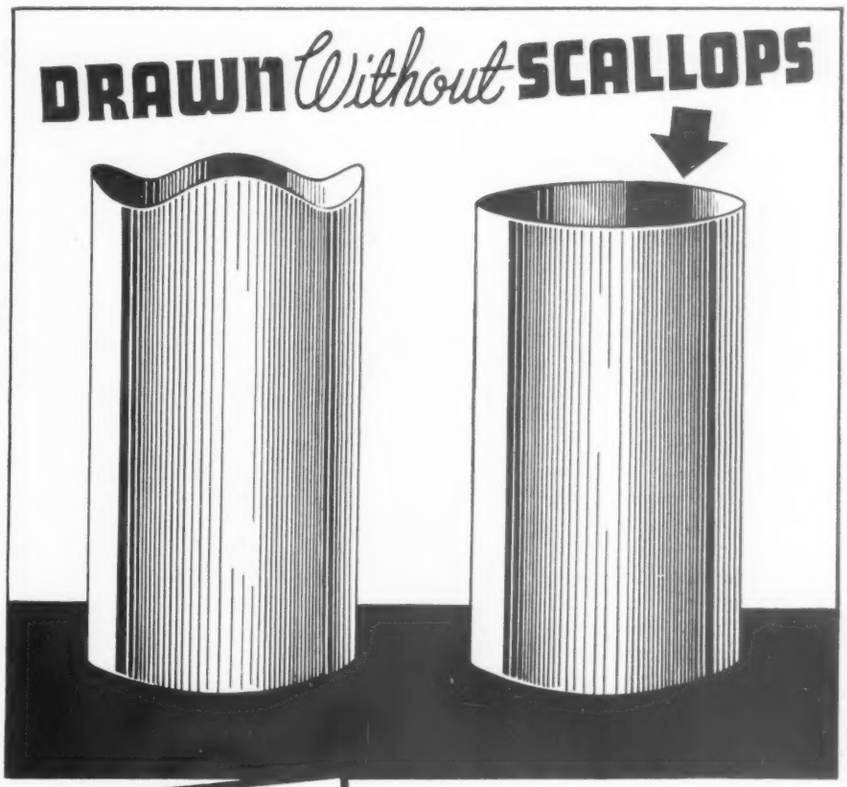
Locomotives Pending

Columbus & Greenville, five 2-8-2 type locomotives; bids asked.
Reading-Central of New Jersey, 15 diesel-electric locomotives; bids in.

Buses Booked

American Car & Foundry Co., New York: Twenty-five 35-passenger for Brooklyn Bus Corp., Brooklyn, N. Y.; two 35-passenger for Des Moines Railway Co., Des Moines, Iowa; six 35-passenger for San Diego Electric Railway Co., San Diego, Calif.; seventeen 26-passenger for Staten Island Coach Co., Staten Island, N. Y.; 40 air-conditioned coaches for Santa Fe Trails Transportation Co.

Twin Coach Co., Kent, O.: Nine 31-passenger for Columbus & Southern Ohio Electric Co., Columbus, O.; six 23-passenger for Winnipeg Electric Co., Winnipeg, Man.; six 32-passenger for Birmingham Electric Co., Birmingham, Ala.; five 29-passenger for Milwaukee Electric Railway & Light Co., Milwaukee; five 23-passenger for Kansas Power & Light Co., Topeka, Kans.; four 31-passenger for Valley Motor Transit Co., East Liverpool, O.



Thomas engineers are continually confronted with problems which they solve in various ways whether with gauge accuracy, special analysis of steels, or special tempers. One of the most difficult problems we have had to solve is that of non-scalloping, and while authorities on the subject agree that it is not possible to produce a guaranteed non-scalloping steel, still Thomas has succeeded in developing a product in intermediate and light gauges which has been adopted in many cases where non-scalloping steel is a consideration. In such instances the fabricator has been successful in eliminating costly trimming operations. In view of these savings, Thomastrip proved more economical.

Wherever similar problems or other problems are involved, consult Thomas engineers who have shown for many, a definite saving through the use of specialized Thomastrip.

THE THOMAS STEEL CO. · Warren, O.

Specialized Producers of Cold Rolled Strip Steel

Behind the Scenes with STEEL

Better Buggies

■ On page 15, and in Mirrors of Motordom, you can see for yourself that Dr. Detroit, the famous pulse-regulator and psychologist, is all set to hypodermic us back into a stretch of good business once again. We would have sworn we were immune but we already find ourselves hypnotized into opening up the ailing billfold and listening with awe as the saleman spins through his honeyed story. Someone stop us, please.

G. M. Preview

■ And incidentally, General Motors certainly did a swell job at the preview held one day before the official opening of the New York Automobile Show. The Waldorf-Astoria's grand ballroom was jampacked with almost five thousand worthwhile citizens who inspected the new models and partook of the abundant G. M. hospitality. Corporation presidents brushed shoulders with movie stars and politicians, and Eddie Duchin's band left nothing to be desired. Messrs. Sloan, Knudsen, Kettering and Grant headed the receiving line and Mr. Knudsen in particular reminded us of Warren G. Harding, in the days when he really went to town as a handshaker of verve and distinction. All in all it was quite a party.

Mr. Schwab Attends

■ But to us, the high spot of the evening was when we saw the grand old man of steel, Charlie Schwab himself, and after quite a struggle managed to elbow our way up to him. It was a pleasure to tell him how nice it was to see him and how well he was looking. Also, we had a chance to introduce the missus, and to Mr. Grace as well. Mr. Schwab eased our ego up several notches by commenting on the good publishing job being done on STEEL and the pleasure it gave him to read it. At the same time he was reminded of a favor and a service which he did us some years back, when STEEL's grandpappy, the old Iron Trade Review, was mailed out in a tightly wrapped cylinder. When the wrapper was torn off the book shot out like a main spring, but unfortunately it did not stay that way. Maybe we used a paper with a too high carbon content in those days. Well, whether it was because Mr. Schwab was wounded by the recoil, or because he much preferred a magazine which would lie flat in front of him, he got in touch with us and suggested we mail it flat. The idea fell upon receptive ears and the change was made and never deviated from.

Ade'ine & Ann

■ We find ourselves this week with a flock of two new and unexpected readers. Over in Sheffield, England, Mr. Simone of Edgar Allen & Co., Ltd., chuckles merrily at our suggestion to make beer pokers of their new heat-resisting Maxhete steel and we chuckle just as merrily at his serious suggestion that this might be a real market at that. But from now on, we're afraid our favorite reader is going to be Adeline Simpson of the Pure Oil Co. out in Chicago. Adeline (she calls us Surely) comes right out and says we're the only thing she reads in the whole issue except the heavy melting steel quotations. She says she has been faithful for more than a year now and then makes us feel good all over by asking how baby Ann is making out. Well, Adeline, just between us, she is unquestionably a genius. Already, at the tender age of three months she can distinctly say Shrdlu and she has the most agreeable sense of humor we've ever seen. She just laughs and laughs at all of our stale jokes and she never yet has stopped us with, "Oh, I heard that one when I was kicking the slats out of my cradle". And just the day before yesterday, she. . . .

—SHRDLU

Wire

Wire Prices, Page 73

Cleveland—Improvement in wire demand is restricted principally to automotive suppliers. Production is the heaviest so far this year, with deliveries extended four to six weeks on many items. Merchant products are seasonally quieter in farm areas. Prices are firm.

Chicago—Wire bookings still tend upward. Seasonal quiet in such items as merchant products for farm use and wire mesh is offset by continued activity in manufacturers' wire. Automotive needs contribute substantially to the latter.

Boston—Orders for wire are well sustained, miscellaneous demand broadening in some directions with automobile requirements better than expected. Machine screw product consumers are taking heavier tonnage and manufacturers' wire in general is active. Recent improvement in rods is also held while numerous specialties are moving well. Buyers are asking for prompt delivery, with indications consumption is moving upward steadily but little buying being down for inventories.

New York—Wire demand is steady and well diversified, with mills operating 70 to 75 per cent in some finishing departments. With a few exceptions deliveries are prompt. Wire rod buying has increased, reflecting low stocks among numerous users. Spring wire is moving actively to the furniture and automotive industries.

Shapes

Structural Shape Prices, Page 72

New York—Bids on 18,000 tons, superstructure, Meeker avenue bridge, Brooklyn, rejected Nov. 15, are readvertised for opening Nov. 28. New inquiry includes 3750 tons for a Delaware aqueduct section, Fishkill, N. Y., closing Dec. 6 with the board of water supply, New York. Awards, including an 850-ton viaduct, Hoboken, N. J., and several small bridges, are estimated at 5000 tons, with a New York city public school taking close to 1000 tons.

Pittsburgh — Shape demand is steady, with a fair amount of fabricated material pending. Largest of new inquiries are 2000 tons for a Texas-Oklahoma bridge and 1600 tons for a factory building, Durham, N. C.

Cleveland—Structural awards for public projects are slow to develop, while awards for private jobs are small individually. Some pickup in

the latter is anticipated. Fabricated prices remain weak.

Chicago—First section of the Chicago subway, up for contractors' bids Dec. 1, will take 1000 tons of beam ribs, liner plates and miscellaneous structurals, in addition to 2500 tons of concrete bars. Structural demand generally is steady. Few large inquiries or awards have appeared locally.

Boston—Structural contracts are more numerous, mostly small bridges with 600 tons pending for Maine spans, part of which have been bid. The largest award includes 920 tons, post office annex, Providence, R. I. with comparatively little tonnage going to district fabricating shops. Bridge repair work continues substantial, but most such spans are small requiring little fabrication. Hospital needs in Connecticut account for close to 1000 tons.

Philadelphia—Fabricators are encouraged over the appearance of somewhat more private work. Considerable amount of public work is also current and pending. Bethlehem Steel Co., Bethlehem, Pa., is low on 3000 tons on a structural shop and runways for the Norfolk navy yards, and also booked 2400 tons for a courthouse, Philadelphia. Fabricated prices remain weak.

Buffalo—Several school jobs calling for moderate tonnage are bolstering the structural market. A joint bid submitted by Winston Brothers, Minneapolis and C. F. Haglin & Sons Co., Buffalo, was low on the general contract for the 1500-ton Kenmore high school.

San Francisco — Interest centers around the outcome of bids just opened on 16,000 tons of transmission towers, Los Angeles, for which American Bridge Co., Pittsburgh, is low. Several new inquiries, involving fair sized lots have come into the market for figures. Awards totaled only 566 tons and brought the aggregate for the year to 136,947 tons, compared with 136,428 tons last year. This is the first time this year that awards have exceeded the corresponding period a year ago.

Shape Awards Compared

	Tons
Week ended Nov. 19	**17,678**
Week ended Nov. 12	**15,503**
Week ended Nov. 5	***40,700**
This week, 1937	**10,242**
Weekly average, year, 1937	**21,736**
Weekly average, 1938	**19,825**
Weekly average, October ..	**17,160**
Total to date, 1937	**1,146,042**
Total to date, 1938	***931,755**

***Revised**

Includes awards of 100 tons or more.

Shape Contracts Placed

2400 tons, courthouse, Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa., also includes 130 tons of bars.

1585 tons, bridge, Missouri river, Rulo, Mo., to Omaha Iron Works, Omaha.

1500 tons, government foundry building, Mare Island, Calif., to Moore Dry Dock Co., San Francisco.

1330 tons, crane runways, navy yard, Charleston, S. C., to Belmont Iron Works, Eddystone, Pa., spec. 8848; previously reported as 950 tons, contract, $123,777.

1145 tons, highway bridges, Allegheny avenue, Twenty-first and Twenty-second streets, Philadelphia, to Fort Pitt Bridge Works, Pittsburgh.

930 tons, public school 194, New York, to Harris Structural Steel Co. Inc., New York; bids Nov. 7, on steel direct, fabrication and erection, board of education, New York.

850 tons, viaduct, Hoboken, N. J., to American Bridge Co., Pittsburgh; George M. Brewster & Son, Bogota, N. J., general contractor.

600 tons, steel sheet piling, bulkhead, Eighty-second street south to Bowery Bay, Queens, N. Y., divided between Bethlehem Steel Co., Bethlehem, Pa., and Carnegie-Illinois Steel Corp., Pittsburgh; J. Rich Steers Inc., New York, general contractor.

See the Point

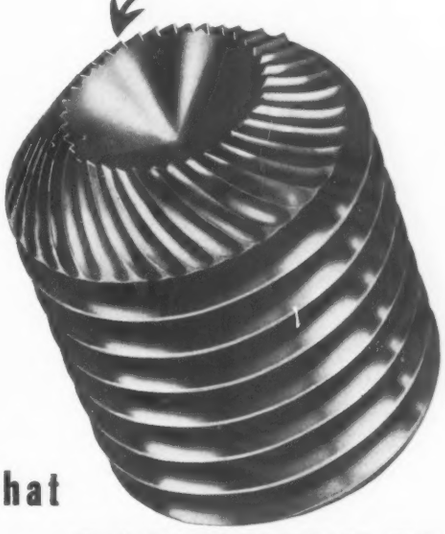


Fig. 1641
Pat. app.
for

. . . that

KNURLING POSITIVELY PREVENTS VIBRATION FROM LOOSENING THE—

UNBRAKO

SELF-LOCKING HOLLOW SET SCREW

By merely tightening-up this new Cup Point Set Screw in the ordinary manner, it automatically locks itself in place and WILL NEVER VIBRATE LOOSE BY ITSELF. One important and outstanding advantage in the "Unbrako" Self-Locker is that it can be adjusted over and over again and will lock equally well every time. Another is the absolute lack of resistance offered by the knurling during tightening-up. These facts have been conclusively proven by countless tests made in many different industrial plants and under varied operating conditions.

Write for samples, prices and more information about the use of "Unbrako" Knurled-on-the-point Self-Locking Hollow Set Screws.

STANDARD PRESSED STEEL CO.

BRANCHES BOSTON DETROIT INDIANAPOLIS — JENKINTOWN, PENNA. Box 579 — BRANCHES CHICAGO ST. LOUIS SAN FRANCISCO

500 tons, hangar, San Clemente Island, Calif., to Western Pipe & Steel Co., San Francisco.

465 tons, power plant, The Texas Co., Port Arthur, Tex., to American Bridge Co., Pittsburgh.

390 tons, warehouse, Wheeling Corrugating Co., St. Louis, to Austin Co., Cleveland.

375 tons, government building, Mare Island, Calif., to Golden Gate Iron Works, San Francisco.

355 tons, buildings, J. H. Stone & Sons, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

355 tons, approach, George Washington bridge, Harlem river speedway connection, New York, to American Bridge Co., Pittsburgh; Wood & Hagen, New York, general contractors.

350 tons, bridge, Clifton, N. J., to American Bridge Co., Pittsburgh; through Fraanklin Contracting Co., Newark, N. J.

333 tons, steel superstructure and floor, movable bridge, Southport-Boothbay Harbor, Me., to Lackawanna Steel Construction Co., Buffalo; bids Nov. 9, state highway department, Augusta, contract 2, Max L. Wilder, bridge engineer.

300 tons, bridge, Manistee, Mich., to Wisconsin Bridge & Iron Co., Milwaukee.

275 tons, state highway bridge, project RC-3998, Steuben county, New York, to American Bridge Co., Pittsburgh; Shore Bridge Corp., Rensselaer, N. Y., general contractor, $94,771.70; bids Oct. 11, Albany.

255 tons, subways, Forty-eighth street, Lincoln, Nebr., to Omaha Steel Works, Omaha.

250 tons, grade crossing, Erie railroad, Allendale, N. J., to American Bridge Co., Pittsburgh; George M. Brewster & Son, Bogota, N. J., general contractor.

225 tons, bridge, Ulvah, Ky., to St. Louis Structural Steel Co., St. Louis.

225 tons, bridge, Lodi, Wis., to Duffin Iron Works, Chicago.

210 tons, grade crossing, West Shore railroad, Bogota, N. J., to American Bridge Co., Pittsburgh; Ole Hansen, Venta City, N. J., general contractor.

200 tons, Dearborn street bridge, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

200 tons, bridges, Crawford and Monroe counties, Wisconsin, to Lakeside Bridge & Steel Co., Milwaukee.

200 tons, bridge 5806, Minnesota, to Minneapolis-Moline Power Implement Co., Minneapolis.

175 tons, alterations to incinerator plants, Cincinnati, to Oregonia Bridge Co., Lebanon, O.

170 tons, mill building, Union Tank Car Co., Wood River, Ill., to Joseph T. Ryerson & Son Inc., Chicago.

165 tons, club building, Boys' Club of Detroit, Detroit, to Roura Iron Works, Detroit.

160 tons, galvanized structural steel for Guntersville dam switchyard, Tennessee valley authority, Knoxville, Tenn., to International Derrick & Equipment Co., Columbus, O., $16,788; bids Oct. 26.

155 tons, bridge, Union Pacific railroad, Dry Sandy Creek, Nebr., to Paxton & Vierling Iron Works, Omaha, Nebr.

155 tons, bridge, Sp-24-1020, Walthall county, Mississippi, to Jones & Laughlin Steel Corp., Pittsburgh.

150 tons, addition, administration building and storehouse, navy yard, Charleston, S. C., to Bristol Steel & Iron Works Inc., Bristol, Va.

150 tons, state bridge, Crenshaw county, Alabama, to Virginia Bridge Co., Roanoke, Va.; Goodwyn & Murphree, Troy, Ala., general contractors.

145 tons, bridge, sec. 540-Vf, Bensonville, DuPage county, Illinois, to Lakeside Bridge & Steel Co., Milwaukee.

135 tons, high school, Peru, Ill., to New City Iron Works, Chicago.

135 tons, bridge FAS 915-D, Madison and Walker counties, Texas, to North Texas Iron & Steel Co., Fort Worth, Tex.

135 tons, building, Skyline Mfg. Co., Atlanta, Ga., to Ingalls Iron Works, Birmingham.

135 tons, building, Cumberland Mfg. Co., Atlanta, Ga., to Ingalls Iron Works, Birmingham, Ala.

130 tons, warehouse, Hancock Warehouse Co., Philadelphia, to Roy Robinson Co., Philadelphia.

130 tons, bridges, Vermont, including 76 tons, Wilmington, to Bethlehem Steel Co., Bethlehem, Pa.; Haynes Bros., Wilmington, N. Y., general contractor.

130 tons, roof frame, Tennessee Valley Authority, Chickamauga dam, to Lakeside Bridge & Steel Co., Milwaukee.

125 tons, bridge FAS 63B, Cass and Marion counties, Texas, to Mosher Steel Co., Dallas, Tex.

115 tons, building, Greyhound Bus Lines, Cleveland, to Rogers Structural Steel Co., Corry, Pa., through National Concrete Fireproofing Co., Cleveland.

110 tons, vocational school, LaCrosse, Wis., to C. Hennecke Co., Milwaukee.

100 tons or more, alterations and additions, geology building, Louisiana State University, Baton Rouge, La., to Jones & Laughlin Steel Corp., New Orleans.

100 tons, shapes and bars, academic building, Fort Riley, Kan., to Omaha Steel Works, Omaha, and Ceco Steel Products Co., Omaha; Olson Construction Co., Lincoln, Nebr., general contractor.

100 tons, warehouse, navy yard, Mare Island, Calif., to Judson-Pacific Co., San Francisco.

100 tons, piling, repairing bridge over Santa Clara river, Los Angeles county, California, for state, to unnamed interest.

100 tons, Swedish pavilion, World's fair, New York, to Berkshire Iron Works, Brooklyn, N. Y.

Shape Contracts Pending

18,000 tons, superstructure, Meeker avenue bridge, Newtown creek, Brooklyn, N. Y.; bids of Nov. 15 on which American Bridge Co. was low, rejected; readvertised for Nov. 28, department of public works, New York.

15,000 tons, transmission towers, water and power department, Los Angeles; American Bridge Co., Pittsburgh, low.

4000 tons, machine shop, navy yard, Mare Island, Calif.; bids Dec. 9.

3750 tons, section of Rondout-West Branch tunnel, Delaware aqueduct, Fishkill and East Fishkill, N. Y., contract 319, board of water supply, New York; bids Dec. 6.

3000 tons, structural shop and runways, Norfolk navy yard; Bethlehem Steel Co., Bethlehem, Pa., low, bids Nov. 16.

2000 tons, bridge over Red river, Waurika, Okla.-Wichita Falls, Tex.

1600 tons, factory building, American Tobacco Co., Durham, N. C.

1500 tons, high school, Kenmore, N. Y., joint bid of Winston Brothers, Minneapolis, and C. F. Haglin & Sons Co., Buffalo, low on general contract.

1100 tons, ventilation building, Queens end, Midtown tunnel, New York; Cauldwell-Wingate Construction Co., New York, low, $547,000; bids Nov. 15.

1100 tons, schools, Lockport, N. Y.; bids Nov. 28.

1000 tons, bridge, Gardiner, Mont., U. S. bureau of public roads.

1000 tons, junior high school, Bloomfield, N. J.; bids Nov. 25.

900 tons, public school 221, Brooklyn; bids direct on steel and erecting, Nov. 21.

950 tons, piling, section 3, East river drive, New York.

922 tons, bridge, Yellowstone National

Park, Wyo., for bureau of public roads; bids Dec. 6.

828 tons, crossing near Turlock, Stanislaus county, California, for state; bids Nov. 30.

750 tons, grade elimination, Absecon, N. J.; Golder Construction Co., Philadelphia, general contractor.

675 tons, Washington and Oregon highway projects; bids in.

650 tons, two buildings, submarine base, New London, Conn.

650 tons, bridge, Wyandotte, Okla.; bids in.

615 tons, high school building, Wauwautosa, Wis.

600 tons, cutting edges for piers, Ohio river bridge, Owensboro, Ky.

450 tons, municipal airport, Great Falls, Mont.

375 tons, overpass, K street, Washington; bids in.

350 tons, New York street bridge, Indianapolis.

325 tons, bridge, Caledonia, N. Dak.-Shelby, Minn.

325 tons, dining hall, Texas A. & M. college, College Station, Tex.

325 tons, bridge, Cummings, N. Dak.-Neillsville, Minn.

300 tons, building No. 2 and garage, state hospital, Niantic, Conn.

200 tons, bridge, Benton Harbor, Mich.

200 tons, school, Naples, N. Y.

200 tons, Bonny Eagle covered bridge, Standish-Hollis, Me.; bids Nov. 23, state highway commission, Augusta, Max L. Wilder bridge engineer, on steel superstructure direct, estimated $15,600.

200 tons, elementary school, Twenty-second and Norris, Philadelphia; bids Nov. 22.

200 tons, school, Ambler, Pa.; new bids Dec. 1.

190 tons, grade crossing elimination, Eads, Colo.

171 tons, Verdugo Wash. outlet bridge, Los Angeles, for United States Engineer office; Bethlehem Steel Co., Los Angeles, low.

150 tons, power plant, Lakeland, N. J.; bids Nov. 25.

150 tons, repairs and extensions to buildings, U. S. government, Armory, Mass.

136 tons, crossing near Rose Creek, Humboldt county, Nev., for state; bids Nov. 22.

135 tons, state bridge over Clam river, Sandisfield, Mass.

135 tons, state bridges, Pittsfield and Millville, Mass.; bids in.

125 tons, addition to office building, Procter & Gamble, Cincinnati.

125 tons, armory, national guard, Indianapolis, Ind.

120 tons, highway bridge, specification 1135-D, bureau of reclamation, Kremmling, Colo.

120 tons, building, Celanese Corp., Amcelle, Md.

Unstated, roller gates for Roza project, Washington state; bids to reclamation bureau, Denver, Nov. 29; Spec. 812.

Unstated, steel towers Bonneville distribution system; bids to Bonneville administrator, Portland, Nov. 28.

Unstated tonnage, U. S. army air corps technical schools Nos. 1 and 2, Chanute Field, Rantoul, Ill.

Unstated tonnage, Chapel, Williamsport Dickinson seminary, Williamsport, Pa.; bids Nov. 28.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 73

Bolt, nut and rivet sales so far this month are ahead of the comparable October period. Automotive, tractor and general industrial demand is improved, while railroad buying continues to lag. Jobbers' requirements are well maintained. Bolt and nut prices are somewhat firmer, though irregularities have not disappeared entirely.

Reinforcing

Reinforcing Bar Prices, Page 73

New York—Awards have slackened with purchase of 500 tons for an approach to the George Washington bridge, New York, the largest in this territory. Few contracts for more than 100 tons have been currently placed. Several hundred tons of mesh for New York highways have been bought. Pending inquiry is also smaller.

Pittsburgh—Concrete bar business is quiet, several fairly large jobs in prospect having yet to reach the bidding stage. Largest of new work is 900 tons for a Washington underpass. Prices continue irregular, particularly on smaller lots.

Cleveland—Reinforcing bar demand is slow to improve. Private work is small, but public projects are more numerous and involve larger tonnages. Prices stil are unsteady but have a firmer tendency.

Chicago—About 40,000 tons of concrete bars is expected to be required for the Chicago subway. Contractors' bids on the first of 15 to 18 sections close Dec. 1 and will involve 2500 tons. Most other pending work is small, except for a local vocational school taking 700 tons, but the aggregate is heavier and the outlook favorable.

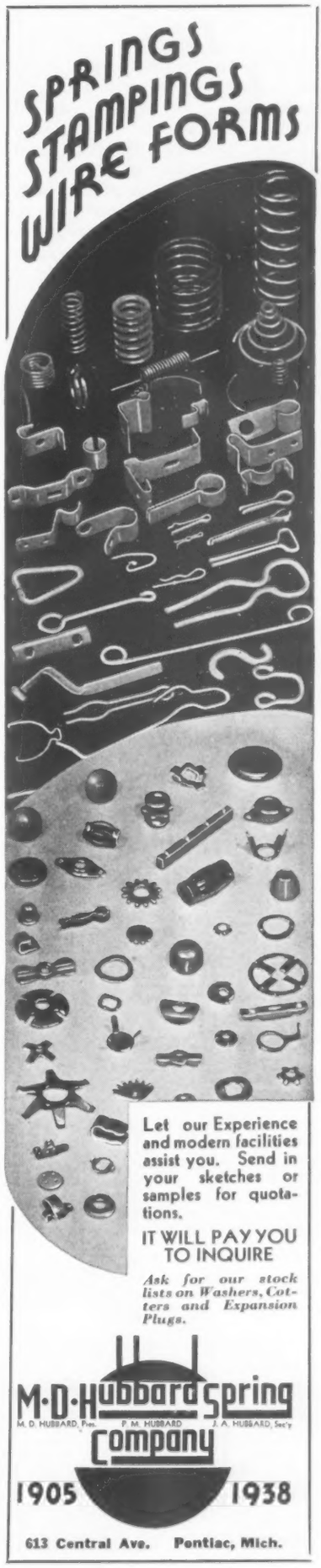
Boston—Reinforcing steel inquiries are mounting, notably for bridges, but few large tonnages are involved. Pending volume is estimated at close to 2000 tons, the largest being 750 tons, federal jail, Danbury, Conn.; Edmund J. Rappoli Co., Cambridge, is low. Purchases involve several hundred tons for bridges. Prices continue weak.

Philadelphia—The federal government will spend $2,000,000 for flood

Concrete Bars Compared

	Tons
Week ended Nov. 19	5,738
Week ended Nov. 12	2,287
Week ended Nov. 5	11,828
This week, 1937	4,714
Weekly average, year, 1937	6.061
Weekly average, 1938	6,534
Weekly average, October ..	6,990
Total to date, 1937	294,084
Total to date, 1938	307,096

Includes awards of 100 tons or more.



Let our Experience and modern facilities assist you. Send in your sketches or samples for quotations.

IT WILL PAY YOU TO INQUIRE

Ask for our stock lists on Washers, Cotters and Expansion Plugs.

M·D·Hubbard Spring Company

M. D. HUBBARD, Pres. P. M. HUBBARD J. A. HUBBARD, Sec'y

1905 1938

613 Central Ave. Pontiac, Mich.

control work on Codorus creek, near York, Pa., with contracts scheduled for letting in January. Plans are due in two weeks for the third contract for the $61,000,000 Harrisburg-Pittsburgh turnpike. Several school and underpass jobs are also up.

San Francisco—A decided pickup in demand is noted and business up for figures and pending exceeds 25,000 tons. Largest inquiry involves 3240 tons for a powerhouse, for the Bonneville dam in Oregon, up for figures on Dec. 9. Bookings for the week aggregated 1960 tons, bringing the total this year to 129,131 tons, compared with 88,447 tons in 1937.

Seattle—The market is quiet and rolling mills are operating on reduced schedules. However, large tonnages for the Narrows bridge, Lake Washington pontoon spans and approaches to Ballard bridge, Seattle, will be placed soon, totaling about 17,500 tons.

Reinforcing Steel Awards

1800 tons, flood repair work, Massachusetts, to Concrete Steel Co., Boston; Truscon Steel Co., Youngstown, O., and Bethlehem Steel Co., Bethlehem, Pa.; numerous miscellaneous small contracts, direct and through contractors.

540 tons, Farm Credit administration building, Berkeley, Calif., to Bethlehem Steel Co., San Francisco.

500 tons, approach, George Washington bridge through Highbridge park, New York, to Igoe Bros., Newark; Wood & Hagen, New York, general contractors, contract HRB-35, Port of New York Authority.

325 tons, 4710-foot sewer section, Medford, Mass., to Concrete Steel Co., Boston; Edward M. Matz Inc., Jamaica Plain district, Boston, general contractor at $318,157.84; project for Metropolitan district commission, Boston; bids Oct. 20.

246 tons, air corps barracks, Chanute Field, Rantoul, Ill., to Joseph T. Ryerson & Son Inc., Chicago; by A. C. Atherton, general contractor.

218 tons, repairs to Santa Clara river bridge, Los Angeles county, California, for state, to unnamed interest.

205 tons, two bridges, Santa Clara county, California, for state, to San Jose Steel Co., San Jose, Calif.

200 tons, bridge over Ohio river, Owensboro, Ky., to Truscon Steel Co., Youngstown.

172 tons, post office and custom house, Corpus Christi, Tex., to Truscon Steel Co., Youngstown, O.; Algernon Blair, Montgomery, Ala., general contractor.

168 tons, specification 2197, navy yard, Mare Island, Calif., to Gilmore Steel & Supply Co., San Francisco.

147 tons, North West armory, Kedzie and North avenues, Chicago, to Ceco Steel Products Corp., Chicago.

133 tons, Lake county tuberculosis sanitorium, Waukegan, Ill. to Truscon Steel Co., Youngstown, O.

130 tons, 250-man barracks, Fort DuPont, Del., to Taylor-Davis Inc., Philadelphia; J. A. Bader & Co., Wilmington, Del., general contractor; Belmont Iron Works, Eddystone, Pa., awarded small tonnage, structural steel.

120 tons, grandstand, fair grounds, Fresno, Calif., to Kyle & Co., Fresno, Calif.

114 tons, two bridges, Los Angeles county, California, for state, to unnamed interest.

110 tons, board of local improvements, Chicago, underpass, Wrightwood avenue and Milwaukee railroad tracks, to Calumet Steel Co., Chicago.

110 tons, grain elevator, Champaign, Ill., Swift & Co., to Calumet Steel Co., Chicago.

100 tons, bridge, Westfield, Mass., to Concrete Steel Co., Boston; Daniel O'Connell's Sons Co., Holyoke, Mass., general contractor.

100 tons, procurement division, treasury department, New York, to Ceco Steel Products Co., Jersey City, N. J.

100 tons, substructure, Center bridge, Sandy river, Farmington, Me., to Bancroft & Martin Rolling Mill Co., Portland, Me.; Wyman & Simpson Inc., Augusta, Me., general contractor.

100 tons, state bridge, Crenshaw county, Alabama, to Truscon Steel Co., Youngstown, O.; Goodwyn & Murphree, Troy, Ala., general contractors.

100 tons, U. S. engineer, Huntington, W. Va., supply depot, to West Virginia Rail Co., Huntington, 2.12c, discount ½ per cent; bids Oct. 31, pro. 101.

Reinforcing Steel Pending

3200 tons, power house, Bonneville dam, Oregon; bids Nov. 30, also includes 480 tons of structurals.

1000 tons, Palos Verdes reservoir, metropolitan water district, Los Angeles; bids Dec. 9.

975 tons, Thomas Circle underpass, Washington; bids Nov. 22.

861 tons, state office building, Sacramento, Calif.; Campbell Construction Co., San Francisco, low at $707,344.

750 tons, federal jail, Danbury, Conn.; Edmund J. Rappoli Co., Cambridge, Mass., low on general contract; bids Nov. 10, Washington.

710 tons, United States Indian irrigation service, invitation 498, Los Angeles, for delivery at Parker, Ariz.; bids Nov. 23.

700 tons, board of education, Chicago; bids in.

455 tons, wire mesh, metropolitan water district, Los Angeles; bids Dec. 1.

433 tons, flood control, invitation 516-39-132, Huntington, W. Va.

409 tons, athletic field unit, George Washington high school, San Francisco; Meyer Construction Co., San Francisco, low at $347,470.

375 tons, substructure, Plumb Beach channel bridge, New York; Arundel Corp., Baltimore, low.

344 tons, crossing near Turlock, Stanislaus county, California, for state; bids Nov. 30.

325 tons, school, Lockport, N. Y.; bids Nov. 28.

308 tons, two barracks, Fort Mason, San Francisco; general contract to Pioneer Construction Co., Seattle, at $353,400.

300 tons, boardwalk, Kenmore, N. J.

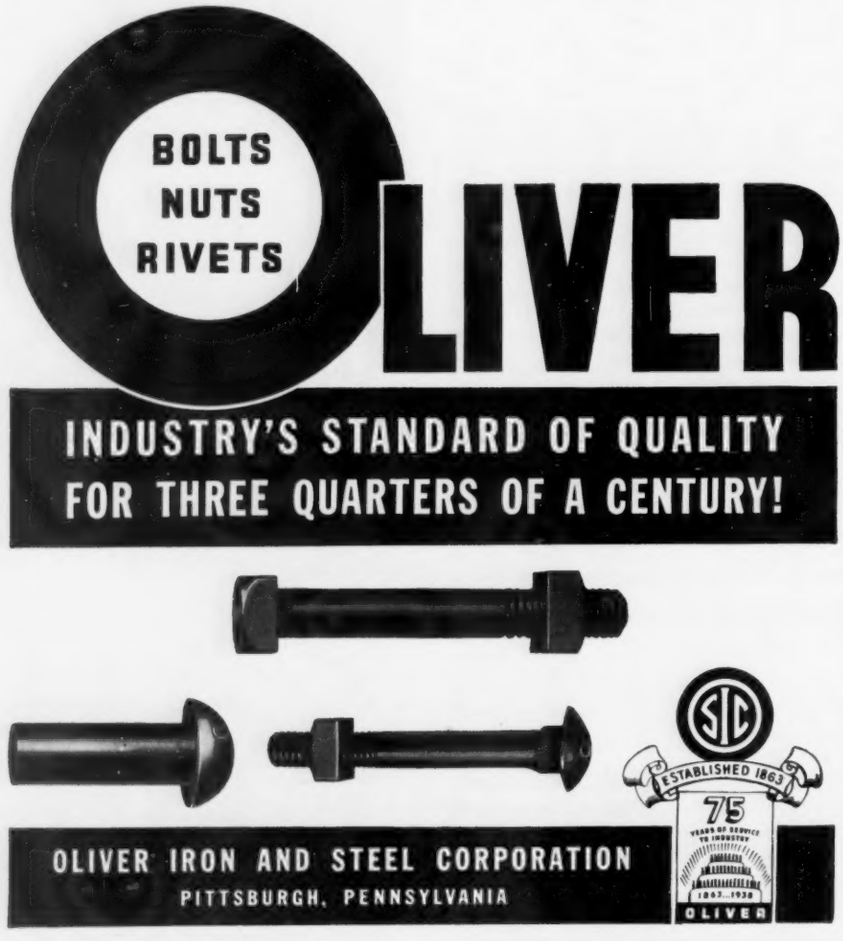
300 tons, K street bridge, Washington, Vincent Schiavi, Wilmington, Del., general contractor.

280 tons, high school, Marshfield, Wis.

280 tons, section 3, East river drive, New York.

260 tons, Grand River Dam authority, Bernice, Okla.

250 tons, mesh and bars, highway proj-



ect RC-4008, Orange county, New York; bids Nov. 29, Albany.
250 tons, army post barracks, Ft. Thomas, Ky.; bids in.
243 tons, Illinois Bell Telephone Co. building, Chicago.
225 tons, high school, Kenmore, N. Y., joint bid of Winston Brothers, Minneapolis, and C. F. Haglin & Sons Co., Buffalo, low on general contract.
225 tons, barracks, Fort Slocum, New Rochelle, N. Y.
220 tons, filtration plant, Racine, Wis.
200 tons, grade elimination, Absecon, N. J.; Golder Construction Co., Philadelphia, general contractor.
200 tons, elementary school, Twenty-second and Norris, Philadelphia; bids Nov. 22.
200 tons, storage warehouse, navy yard, Portsmouth, N. H.
200 tons, school alterations and additions, including grandstand, Wilmington, Del.; bids Nov. 29.
199 tons, Pedley bridge over Santa Ana river, Riverside county, California; bids Nov. 28.
180 tons, Tanner creek bypass, Bonneville dam; Barham Bros., Salem, Oreg., low.
170 tons, school, Bloomfield, N. J.; bids Nov. 25.
130 tons, municipal court building, Philadelphia.

Pig Iron

Pig Iron Prices, Page 74

Pittsburgh — Pig iron releases have continued to improve so far this month. Some new buying has appeared and inquiries are increasing, especially for silvery iron. Foundries are revising upward their estimates of fourth quarter business. Blast furnace operations are unchanged, but orders are catching up with pig iron production.

Cleveland — Pig iron shipments and consumption still tend upward, best gains in demand coming from foundries serving the automotive industry. Jobbing plants also are slightly more active. A number of consumers have ordered additional tonnages, previously having underestimated fourth quarter needs. Prices are firm on new business.

Chicago — Deliveries continue heavier than a month ago, a 15 per cent gain being indicated for November as a whole. Sales are spotty but slightly heavier and somewhat better than anticipated in view of previous heavy coverage.

Boston—While the pig iron melt is improving gradually, new business is light and unshipped tonnages are declining. Prices are firm, including foreign iron. High ocean freight rates tend to keep imported material quotations closely in line with domestic prices.

New York—Pig iron consumption has leveled off, the melt showing little change since a month ago. Needs of soil pipe and stove makers are off seasonally, while producers of heavy castings are lagging somewhat. New business still is restricted by previous forward coverage. Foreign inquiry is dull, although reports persist that 5000 tons has been closed for export.

Philadelphia — Shipments have tapered somewhat, recently having been ahead of consumption. The foundry melt continues to expand slightly, however. Reduction of the import duty on British iron containing not more than .04 per cent phosphorus is not expected to affect the domestic market immediately since prices here are considerably lower. The new rate is 75 cents, against $1.125 previously.

Buffalo—Pig iron shipments this month are expected to touch a new peak since October last year. Buying is increasing gradually but is for immediate requirements only. Increased bookings are attributed principally to miscellaneous demand, with automotive needs up slightly.

Tonawanda Iron Corp., American Radiator Co. subsidiary, has blown in a furnace after being idle since April, making eight of the district's 15 stacks active.

St. Louis—November shipments to date are the heaviest so far this year, reflecting expanding melt among mills and foundries. Consumption this month is expected to be well ahead of the rate a year ago. New business, while light, is ahead of expectations. Automotive needs provide a substantial portion of recent gains in demand for castings.

Cincinnati—Improvement in pig iron releases has been arrested, but melt is steady and heavier specifications are expected next month. New bookings are scant.

Birmingham, Ala.—Pig iron melt continues unabated although it is probable there has been some tapering in shipping instructions. Sixteen of 18 stacks continue in blast.

Toronto, Ont.—Merchant pig iron sales have increased to more than 2000 tons weekly. Demand is confined to spot needs, but the melt is rising slowly, recently topping 60 per cent. November is expected to continue the upturn in production prevailing in October.

Ferroalloys

Ferroalloy Prices, Page 74

New York—Movement of ferromanganese this month is expected to be the heaviest for the year to date. Deliveries next month are thought likely to depend on what action is taken on first quarter

This kind OF GOSSIP
IS A GOOD THING
Traveland is all a-buzz—with nice gossip about The Stevens! Travelers, wise in living, tell about the world of ease and comfort that they find at this largest hotel in all the world.
"Located ideally—in the business district yet on the Park and Lake, removed from the turmoil of congested traffic"...
"The kind of welcome that makes you feel at home"...
"Rare attention to even little details"...
"Always a perfect room selection from modest singles to sumptuous suites"...
"Biggest bargain in living."
These are the things they say.
Come to The Stevens, see for yourself. You'll thank this kind of gossip. You'll find the ease and satisfying comfort which has made The Stevens Chicago's Outstanding Hotel.
Stevens
HOTEL
CHICAGO
OTTO K. EITEL, Managing Director
3000 Rooms with Bath

prices, as well as on the trend of steelmaking. Domestic ferromanganese continues $92.50, duty paid. Spiegeleisen, 19 to 21 per cent, is unchanged at $28, Palmerton, Pa., and 26 to 28 per cent, $33. Other items are steady.

Scrap

Scrap Prices, Page 76

Pittsburgh—Scrap quotations have advanced here, No. 1 heavy melting steel now being quoted $15.25 to $15.75, up 75 cents since a week ago. Small buying has been done at the latter figure for local delivery, while the same price prevailed on orders taken by a Pittsburgh interest for Youngstown shipment. Down-river interests are offering $15.75 for No. 1 steel out of this district, with a fair tonnage moving. Low phosphorus grades are stronger. Railroad specialties are steady but quiet.

Cleveland—Good-sized purchases of scrap by important consumers have left the market here unchanged. A recent sale negotiated in Pittsburgh resulted in several thousand tons going to Lorain, O., at about $14.50 for No. 1 and 50 cents less for No. 2. Another tonnage was bought for Farrell, Pa., said to have been at $15.75 for No. 1 railroad steel, which carried $1 premium. Prices are unchanged in the local market.

Chicago—Scrap prices are substantially stronger here, with No. 1 heavy melting steel up 75 cents for the week at $14.25 to $14.75. Mill buying has quickened, several sales having been made at $14.50. Brokers are paying $14.75, and the market is the highest in more than a year. Other grades also have risen, most items being up 50 cents.

Boston—With boat loading for export more active at several points, heavy melting steel scrap prices are firmer with $13.50 paid for No. 1 and $12.50 for No. 2, dock. For smaller lots, however, scrap is being taken at 50 cents a ton under these quotations. This stronger tone is also accompanied by slight advances on several grades for Pennsylvania delivery, including stove plate. Domestic demand continues slack.

New York—At last week's meeting of the European cartel negotiations for the purchase of 200,000 tons of scrap were postponed for at least one month. Unwillingness to pay higher prices and less urgent need for material were factors in this decision. Scrap demand from eastern domestic consumers continues light, and while prices are unchanged, higher quotations in other districts are reflected here in sentiment rather than in actual figures.

Buffalo—Scrap is stronger, aided by the re-entry of the leading consumer into the market for the first time since last May. Orders were placed for about 6000 tons at prices within prevailing ranges. A large portion calls for No. 2 steel or old bundles at $11 to $11.50. Other local mills also have made purchases recently.

Philadelphia—Scrap is definitely stronger here as a result of increased activity in the export market where buying prices have advanced 50 cents to $13.50 on No. 2 steel and to $14.50 on No. 1. In view of this situation it is believed domestic mills will find it difficult to buy steel at less than $14 and $15, respectively. Steel foundry grades are stronger.

Detroit—Higher prices were bid on recent lists involving about 10,000 tons of bundles. Locally the increase of 25 cents brought the price to $11.75 to $12.25. Other grades are stronger in sympathy, including forge flashings and loose sheet clippings. Cast grades are more active.

Cincinnati—Scrap is stronger as a result of higher steelworks operations and rising prices in nearby markets. Local quotations on most grades are up 25 cents. Mills are taking steady shipments against old contracts and are buying small offerings. Dealer and consumer activity is principally in open-hearth material.

St. Louis—Offerings by dealers and railroads are light, and scrap prices are stronger. Higher prices are quoted on a number of grades, including heavy melting steel and railroad specialties. While mill sales are lacking, reduction in stocks points to renewed buying shortly. Railroad lists are large, but little tonnage will come here.

Birmingham, Ala.—With the exception of heavy melting steel, which last week advanced $1 a ton, due to a spurt in buying on the part of a local steel producer, little activity is evident in the scrap market. Dealers report some scarcity of cast scrap, even in the face of dull buying.

Seattle—Due to a scarcity of No. 1 material which dealers are holding firm at $12.50 f.a.s., the bulk of Japan's buying has gone to Atlantic centers. Japan is buying very little No. 2. That country's allotments for the fourth quarter have been released, but no further buying is expected until about March.

Toronto, Ont.—Except for fair activity in heavy melting steel, cast scrap and stove plate, the market is quiet. Offerings are seasonally light, cold weather restricting receipts from northern rural districts.

Steel AS YOU WANT IT
DRILL ROD
COLD DRAWN
SHAPES

For 39 years we have been drawing steel to our *customers'* specifications. We provide experience, accuracy, the best of finish and the heat treatment just right for the job, an "efficiency" product.

A chart of decimal equivalents will gladly be sent you upon request.

KIDD DRAWN STEEL CO.
Aliquippa, Pa.
(Pittsburgh District) Phone: Aliquippa 196.

Tin Plate

Tin Plate Prices, Page 72

Tin plate sellers anticipate substantial buying the next several weeks as a result of the recent cut of 35 cents a box to $5, Pittsburgh or Chicago. Application of this price through only the first quarter instead of for the first nine months of

next year is expected to stimulate demand. Curtailed buying the past few weeks in anticipation of a price cut also will aid sales. Production has started to expand from its recent low of 30 per cent.

Manufacturing terne plate also has been reduced 35 cents a box, in line with the cut in tin plate. The market now is $4.30, Pittsburgh, Gary or Chicago.

Warehouse

Warehouse Prices, Page 75

Pittsburgh—Deliveries are better, concurrent with improvement in miscellaneous manufacturing. Shipments are appreciably better than a month ago, with the outlook encouraging.

Cleveland—Shipments show little change since a month ago despite a slight decrease in some items. Number of orders has improved somewhat but individual tonnages are disappointing. Most distributors have ample inventories.

Chicago—While sales are off moderately since a month ago, the letdown is less than expected. Further reduction is in prospect the remainder of November, this being a seasonal trend.

Boston—The substantial improvement in warehouse volume which developed last month is well maintained, demand broadening as to products with small lot orders more numerous.

New York—Volume is holding at the October rate, best of the year, with some jobbers showing gains. Demand is well scattered, but improvement in heavier products has been moderate.

Philadelphia—Sales are expanding moderately, now being estimated at no more than 10 per cent less than a year ago, although the entire year is expected to be 40 per cent behind 1937.

Buffalo—Buying continues near the year's peak, a level prevailing the last four weeks. Bars and specialties are in best demand, with sheet inquiries up slightly.

Cincinnati—Sales are heavier. A bulge was noted immediately after the election but warehouses are reluctant to assign a reason for the better demand.

St. Louis—Despite adverse weather, sales the first half of November were slightly heavier than a month ago. Oil country goods are moving briskly, particularly to the new Illinois fields.

Seattle—Buying is spotty, demand unsteady and no out of stock item outstanding. Sheets continue in best demand. Lack of industrial and construction buying is noted and public works projects have not stepped up volume as expected.

Iron Ore

Iron Ore Prices, Page 76

Cleveland—Consumption of Lake Superior iron ore during October totaled 2,780,585 tons, an increase of 466,720 tons over September consumption of 2,313,865 tons, according to the Lake Superior Iron Ore association. In October a year ago 4,203,873 tons were consumed. Stocks at lower lake ports and furnaces Nov. 1 were approximately 4,700,000 tons less than on the comparable date last year. The association's report follows:

	Furnaces	Docks	Total
Nov. 1	33,172,565	5,421,004	38,593,569
Month ago	32,515,577	5,357,982	37,050,338
Year ago..	37,209,855	6,056,572	43,266,427

Steel in Europe

Foreign Steel Prices, Page 75

London — (*By Radio*) — Brighter conditions are being maintained in the steel and iron markets of Great Britain and pig iron buying is expanding, though principally in small lots. Two Middlesbrough hematite furnaces have been relighted. Semi-finished trade is more active and order books are accumulating some backlogs, with output increasing. Structural steel demand is better and tin plate buying is in fair volume.

Imports of steel and iron in October totaled 52,421 tons, a drop of 9379 tons from September. Exports were 159,069 tons, an increase of 17,269 tons over September.

From the Continent comes word of a quieter export demand with Finland and Scandinavia showing most activity. It is understood the wire cartel has reached an agreement with American exporters for an increase in export prices to a number of countries.

Imports, Exports Light

Philadelphia—Exports of pig iron from this port during September included 5000 tons to Germany, 550 tons to Japan and 100 tons to Hong Kong. Several additional foreign inquiries have been reported recently, including some from Japan. Most export business in pig iron still is being done by southern furnaces.

Foreign imports were light during the week ended Nov. 12, being confined to 24 tons of manganese ore from India, five tons of steel tubes and 15 tons of forgings from Sweden, 6 tons of steel bars and 4 tons of shapes from Belgium.

Huge Generators for Coulee Dam Ordered

■ MORE powerful than the largest generators in operation in the United States, three main generators for Grand Coulee dam now being built by the Westinghouse Electric & Mfg. Co. will each have a rating of 108,000 kilovolt-amperes, or

DISC TYPE

ground and lapped for a perfect seal

The bronze disc of the Hannifin Air Control Valve is ground and lapped to form a perfect seal with the seat, which is similarly finished. This simple design has no packing, avoiding leakage and packing maintenance troubles. It gives positive control of air operated equipment.

Made in 3-way and 4-way types, hand and foot operated, manifold, spring return, electric and special models. Write for Valve Bulletin 34-S.

HANNIFIN MANUFACTURING COMPANY
621-631 South Kolmar Avenue • Chicago, Illinois

ENGINEERS • DESIGNERS • MANUFACTURERS • PNEUMATIC AND HYDRAULIC PRODUCTION TOOL EQUIPMENT

HANNIFIN "Packless" AIR CONTROL VALVES

enough power to supply illumination for New York city and Chicago combined.

A $2,267,970 contract to build the generators and a $193,480 contract for two smaller station service generators have been awarded to Westinghouse. More than 4,500,000 pounds of steel, almost 300 miles of copper wire, and over 1,000,000-man hours of labor will be required for their completion.

European Steel Industry Feels New Impetus

(*Concluded from Page* 32)

active. There was a slight recession in iron and steel output in September, but for the first nine months this year the output of steel, not including Austrian production, showed an increase of 2,238,000 tons over the output of the corresponding period of 1937, the figures being 16,816,978 tons and 14,578,889 tons, respectively. Germany, however, is faced with the problem of re-organizing her markets to dispose of the increased production arising out of the absorption of the Austrian iron and steel works, and certain former Czech transforming industries.

This question is directly related to the central European problem that was discussed in our preceding article. (STEEL, Oct. 31, p. 16.) The situation at present is that Czechoslovakia has lost the Trinec iron and steel works to Poland, as already stated. Some wire works have also passed to Poland, while the Mannesmann tube works at Komotau have passed to Germany.

These changes mean a reshuffling of the foreign trade channels between the countries concerned, and also in relation to the Balkan countries which constituted their principal export markets.

Many signs are already apparent that Germany will gain the lion's share, taking advantage for her own industries of the relatively small resources of raw materials which she has obtained from Czechoslovakia, and endeavoring to expand her markets to export surplus products outside her new frontiers.

When this result is obtained, one may wonder how Czechoslovakia will be able to solve its own economic problem, since the dismembered country will probably have to import more, export less, and see its financial resources reduced.

Another, but minor, aspect of the new situation is its effects on the European steel cartel. Czechoslovakia is not a member of the cartel, but Poland is. It is, therefore, likely that an adjustment will have to be made to take account of Poland's increased productive capacity through acquiring the Trinec works, just as negotiations are now proceeding to include Austrian production in Germany's quota. Similar problems arise in connection with other international selling syndicates, such as the IWECO, or wire products, and the hoop syndicate.

Cartel Scouting Scandinavians

The cartel is negotiating with the Scandinavian countries with a view to arriving at some agreement regarding prices and export markets.

If any forecast can be made for the remaining part of the year it is that, provided no further major crisis interferes with normal course of business, the outlook will tend to be more promising. France is the country in regard to which uncertainty prevails, for in a very short time conditions there can take a turn for the worse or for the better.

Oil Expansion To Spur Steel Buying

(*Concluded from Page* 16)

has increased in the past ten years is shown in the following statistics, adjusted to eliminate duplication in receipts and shipments:

Thousands of Barrels

Year	Gasoline	Fuel Oils	Crude Oil
1937	265,200	319,200	338,800
1936	231,500	251,300	295,200
1935	227,244	219,604	255,050
1934	224,959	217,619	270,400
1933	171,635	166,103	232,867
1928	102,127	131,615	149,671

Should oil industry building attain the rate of the 20's, its importance as a steel market would be practically double. For example the oil, gas and water group in 1922 took 14.84 per cent of total finished steel output, ranked second only to the railroads as a steel consumer. In 1923 it absorbed 10.6 per cent of the steel, and was the third largest consumer. From 1924 through 1931 it was the fourth leading steel consumer; in 1929 it used 9.01 per cent of total output or 3,259,229 gross tons, according to STEEL'S distribution statistics.

In 1932 and 1933, oil, gas and water fell to fifth position in steel consumption; to sixth position in 1934, and to seventh position in 1935. In 1936 it was again in fifth position, fell to sixth in 1937. During the past six years it has required only from 4.29 (1935) to 5.84 (1937) per cent of total finished steel output.

$500,000 FOR CAN PLANT

Continental Can Co. will erect a $500,000 plant at Oil City, Pa., to make one, two and five-quart cans for merchandising lubricating oil.

Much Foreign Ore Arrives

Baltimore—Iron ore arrivals here in October of 220,050 tons were the heaviest this year, comparing with 203,125 tons in April, second largest total. Shipments compared with 134,639 tons in September, and brought the total for the first ten months up to 1,616,348 tons.

Manganese ore arrivals total 15,000 tons, the lightest monthly figure for the year to date. These arrivals compared with 46,219 in September, and 54,099 tons in January, when arrivals were the heaviest. Total importations here for the first ten months were 364,632 tons.

Chrome ore importations in October aggregated 7289 tons, against

TUBE MILL EQUIPMENT OF MODERN DESIGN

Let us know your problems and we will be glad to be of service to you.

42 years experience in building tube mills.

TAYLOR-WILSON MANUFACTURING CO.
MAIN OFFICE and WORKS
500 Thomson Ave.
McKEES ROCKS, PA.

3004 tons in September and 16,527 tons in April when arrivals of this ore reached their peak. Total shipments for the first 10 months were 100,554 tons.

Three thousand tons of pyrites were received in October, in one shipment; 200 tons of ferromanganese, also one shipment; and one lot of 30 tons of pig iron. Magnesite arrivals comprised three shipments, one for 25,403 bags, another for 18,237 bags and still another for 20 drums.

Activities of Steel Users, Makers

■ HEPPENSTALL Co., Pittsburgh has made an agreement with Canada Foundries & Forgings Ltd., Welland, Ont., covering the manufacture of its die blocks and other drop forge accessory products in Canada.

♦

National Electric Welding Machines Co. has removed its Cleveland office from 10465 Carnegie avenue to 3109 Mayfield road.

♦

Seamless Steel Equipment Corp., New York, has been appointed eastern representative for the Union Boiler & Mfg. Co., Lebanon, Pa.

♦

Chicago-Latrobe Twist Drill Works, Chicago, has moved from 100 South Jefferson street to 411 West Ontario street.

♦

United States Steel Wire Spring Co. has moved its factory and offices to larger quarters at 7800 Finney avenue, Cleveland.

♦

C. E. Phillips & Co., Detroit, has been appointed exclusive sales representative in the Detroit territory for the Union Chain & Mfg. Co., Sandusky, O.

♦

Pyramid Metals Co., Chicago, manufacturer of moldings, has moved from 455 North Oakley boulevard to a new modern factory at 1335 North Wells street.

♦

Samuel I. Winternitz & Co. is liquidating property of the Bessemer Foundry & Machine Co., Bessemer, Ala., including the foundry, machine shop and pattern shop buildings and equipment, office building and equipment, and also the real estate comprising two blocks and two railroad connections which serve the plant.

♦

Hewitt Rubber Corp., Buffalo, has appointed the following new distributors: Joseph Glenn & Sons and their affiliate, E. P. Alexander & Sons, Clifton Heights, Philadelphia; Tools & Supplies Inc., Indianapolis; Campbell Hardware & Supply Co., Seattle; Laurence Belting Co., New York; Everson Electric Co., Allentown, Pa.

♦

Claude B. Schneible Co., Chicago, maker of dust collecting equipment, has made the following appointments: O. W. Anderson, Los Angeles, representative for southern California; Robert M. Taylor Co. San Francisco, northern California; King Machinery Co., Cambridge, Mass., New England district; R. F. Skarnes, Minneapolis, north central territory, and Guy H. Rumpf, St. Louis territory. L. C. Beers, formerly representative in New England, has been transferred to Chicago as assistant sales manager.

Indian Iron & Steel Co. Has Prosperous Year

■ Indian Iron & Steel Co. Ltd., Calcutta, second largest pig iron producer in India, made 701,250 tons of pig iron in the year ended March 31, 1938. Coke production was 701,160 tons. Pig iron exports totaled 620,382 tons, 31,711 tons were used in cast iron pipe and the remainder sold to foundries and railroads in India. Coke oven by-products included: Coal tar 23,634 tons, sulphuric acid 9105 tons, sulphate of ammonia 8192 tons, naphthalene 101 tons, all sold in India.

Plant improvements under way include a new coke oven battery, gas-cleaning plant, larger powerhouse and additional pumping plant.

Net profit was $3,800,000. Dividend for the year was 35 per cent, and $850,000 was transferred to dividend adjustment account. Reserve for income and super-tax payments was $900,000.

Census Shows Cast Pipe Employment, Wages Gain

■ Manufacturers of cast iron pipe and fittings reported increases in employment, wages and value of product in 1937, compared with 1935, according to the biennial census of manufactures.

Wage earners in 1937 numbered 17,613, an increase of 30.1 per cent over 13,543 in 1935; wages totaled $18,082,880, or 74.4 per cent more than $10,370,393 paid in 1935; value of products in 1937 was $61,118,463, up 61.4 per cent from $37,870,081.

Equipment

Cleveland — Machine tool and equipment sales have registered substantial gains since the elections, and some dealers report the most active business this year. Orders and inquiries continue to come from a wide variety of industries and mostly are of small or moderate-size. No large lists are pending. Used machinery demand is fairly active and most dealers report a scarcity of good used equipment.

Chicago — Machine tool interests here report both inquiries and orders heavier since the end of the previous week. Demand was quiet for some time, but stronger buying encourages sellers to look for further improvement in the near fu-

THE HANNA FURNACE CORPORATION
MERCHANT PIG IRON DIVISION OF NATIONAL STEEL CORPORATION
Buffalo Detroit New York Philadelphia Boston

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

Nov.	Copper Electro, del. Conn.	Copper Lake, del. Midwest	Copper Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot. N.Y.	Nickel Cathodes
12	11.25	11.37½	10.77½	47.00	47.15	5.10	4.95	5.05	20.00	12.25	35.00
14	11.25	11.37½	10.77½	46.70	46.85	5.10	4.95	5.05	20.00	12.25	35.00
15	11.25	11.37½	10.77½	46.45	46.65	5.10	4.95	5.05	20.00	12.25	35.00
16	11.25	11.37½	10.77½	46.50	46.70	5.10	4.95	5.05	20.00	12.25	35.00
17	11.25	11.37½	10.77½	46.30	46.50	5.10	4.95	5.05	20.00	12.25	35.00
18	11.25	11.37½	10.77½	46.30	46.50	5.10	4.95	5.05	20.00	12.25	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 11.25c Conn. copper

Sheets

Yellow brass (high) 17.50
Copper, hot rolled 19.37½
Lead, cut to jobbers 8.25
Zinc, 100 lb. base 9.75

Tubes

High, yellow brass 20.25
Seamless copper 19.87½

Rods

High yellow brass 13.37½
Copper, hot rolled 15.87½

Anodes

Copper, untrimmed 16.62½

Wire

Yellow brass (high) 17.75

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

New York 6.80-6.90
Cleveland 7.25-7.50
Chicago 6.62½-6.87½
St. Louis 6.87½-7.00

Heavy Copper and Wire

New York, No. 1 ..... 8.25-8.50
Cleveland, No. 1 ..... 8.25-8.50
Chicago, No. 1 ..... 8.25-8.50
St. Louis 8.25-8.50

Composition Brass Borings

New York 5.90-6.15

Light Copper

New York 6.75-7.00
Cleveland 6.50-6.75
Chicago 6.62½-6.87½
St. Louis 6.75-7.00

Light Brass

Cleveland 3.75-4.00
Chicago 4.25-4.50
St. Louis 4.37½-4.62½

Lead

New York 4.00-4.25
Cleveland 4.00-4.25
Chicago 4.00-4.12½
St. Louis 4.00-4.25

Zinc

New York 2.50-2.62½
Cleveland 2.50-2.75
St. Louis 2.75-3.00

Aluminum

Borings, Cleveland 6.50-6.75
Mixed, cast, Cleveland 8.75-9.00
Clips, soft, Cleveland 13.25-13.50
Mixed cast, St. Louis 9.25-9.50

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads.. 11.25
Standard No. 12 aluminum....14.00-14.50

Special Carbon and Alloy Spring Wire

WIRE "SENECA" STEEL — QUALITY — TRADE MARK

The demand for SENECA Quality Special Spring Wire is increasing rapidly.

We are prepared to meet all demands.

We can supply practically all grades in rounds and

SHAPES and sizes from ½" to .004.

HIGHEST QUALITY GUARANTEED

Please send your inquiries with specifications

The Seneca Wire & Mfg. Company
FOSTORIA, OHIO

Established 33 Years

ture, although possibility is seen present improvement may be only spasmodic.

Seattle — Seasonal conditions are restricting demand, but public works are calling for various items. Repairs on the north jetty, Coos Bay, Oreg., will take about 25 tons of chain, bolts, spokes, etc., and 19,000 feet of steel cable. The Lake Washington pontoon bridge, with bids at Olympia, Wash., Nov. 29, involves electrical equipment figured at $126,000. Graybar Electric Co. will furnish Tacoma with six 5000 kilowatt transformers for the Nisqually substation.

Nonferrous Metals

New York—Unfavorable political developments in Germany and France last week stimulated liquidation of speculative holdings which in turn resulted in a steady decline in prices on the London Metal Exchange. This movement was accelerated by the generally weaker tone in Wall street. The only direct affect on metals here was a decline in red metal scrap prices and slower buying.

Copper — Export prices eased steadily, closing at 10.70c, c.i.f. compared with 11.35c at the end of the preceding week. October copper statistics, showing a decline in world refined stocks of 32,743 tons, including 25,781 in domestic supplies, but an increase of 17,852 tons in blister stocks, including 12,781 tons in domestic supplies, were favorably received here. Operators abroad were disappointed in the large increase in blister stocks. Consumption has continued to increase here, however, with brass mills now operating at about 70 per cent of capacity. Consumers' nearby needs are well covered, allowing them to withhold new purchases until the foreign market steadies. Electrolytic held unchanged at 11.25c, Connecticut.

Lead—Sales have tapered somewhat but the turnover is considered satisfactory in view of the recent heavy volume. Prices held at 4.95c, East St. Louis.

Zinc—Buying dropped off sharply following active demand during the preceding week. The weak London market still forms an effective ceiling over the domestic 5.05-cent East St. Louis level.

Tin—Wide fluctuation in sterling disturbed the tin market with prices tending lower on heavy selling in London. Straits spot closed here at 46.25c compared with 47.00c at the end of the previous week.

Antimony—Demand was dull with prices unchanged on the basis of 12.25c, New York, for American spot in cases and nominally 14.00c, duty paid New York, for Chinese spot.

Construction and Enterprise

Ohio

CANTON, O. — Alloy Aircraft Steel Corp. has been incorporated with 100 shares no par stock by A. H. M. Eisenberg, H. D. Emerman and Martin Hunker.

CLEVELAND — Apex Electrical Mfg. Co., C. G. Frantz, president, is transferring production from its Oakland, Calif., plant and will spend over $100,000 on plant improvements here during the next 90 days.

DAYTON, O. — Army air corps, materiel division, contracting officer, Wright field, will receive bids until 10 a.m., Nov. 23, for four air-cooled air compressors (circular 39-354); one battery charging generator set (circular 39-362); and various type holders for boring lathe tools (circular 39-359).

HURON, O. — Village, Frank McQuellan, mayor, has completed plans and specifications and will probably ask for bids within the week on projected improvements to its sewage plant which will involve chlorinator plant, sludge beds, etc. George B. Gascoigne Co., Cleveland, consulting engineer.

MENTOR, O. — Village, R. G. Clapp, mayor, is taking new bids due at noon, Nov. 26, on individual contracts for constructing water treatment plant (section B) and 150,000-gallon elevated tank (section D). Certified check 5 per cent of bid. Paul W. Elwell, Cleveland, engineer.

NEW BOSTON, O. — City, Roy Canter, service director, has received PWA grant in the proposed construction of a waterworks to cost an estimated $272,727; program includes filtration plant, reservoir, high pressure tank, booster pumping station and lifting pumps. Consultants, Burgess & Niple, Columbus, O.

ORRVILLE, O. — Will-Burt Co. soon takes bids for a one-story, 40 x 60-foot modern addition to its factory which will cost approximately $37,000.

TROY, O. — City, George Smith, service director, is completing specifications and will take bids shortly on separate contracts for improvements to its light and power plant at cost of $175,720. Froelich & Emery Engineering Co., Toledo, O., engineer. (Noted Sept. 26.)

WEST SALEM, O. — Village, L. D. Hall, mayor, is planning to build sewage disposal plant and has filed application with PWA for a grant in the project which will cost $63,000. Consulting engineer, E. D. Barstow, Akron, O. (Noted Sept. 26.)

Connecticut

HARTFORD, CONN. — City, metropolitan commission, plans to install power generating equipment at South Meadows sewage disposal plant at cost of $30,000. W. Alfred Wurts, municipal building, is engineer in charge.

New York

CORNWALL-ON-HUDSON, N. Y.—Village will take bids soon on construction of a water supply system, including new reservoir and water mains, at estimated cost of $166,500. PWA has allotted $70,425 grant on project. H. W. Taylor, Park place, New York, engineer.

New Jersey

ATLANTIC CITY, N. J. — City is making plans to construct a three-story, 200 x 100-foot water filtration plant with 20,000,000-gallon daily capacity, and costing $911,724. WPA has contributed $505,621 on project.

SOUTH AMBOY, N. J. — City proposes to construct a brick and steel sewage treatment plant costing about $135,801. J. A. Conlogue, South Amboy, consulting engineer.

Pennsylvania

SAEGERSTOWN, PA. — Northwestern Rural Electric Co-operative association, Bruce Hecker, superintendent, has awarded contract to Monroe Electric Co., Chicago, for construction of about 334 miles transmitting lines at cost of $357,000.

TYRONE, PA. — Borough has voted to issue bonds for additional sanitary sewers and sewage disposal plant costing $251,348. PWA approved $113,107 grant in work. Borough engineering department engineers are in charge of project.

Michigan

ANN ARBOR, MICH. — Ann Arbor Foundry Co., 1327 Mill street, has begun work in construction of a 48 x 111-foot addition to its foundry to replace section destroyed recently by fire. Dailey Construction Co., Detroit, general contractor. Addition is to be of steel and cement and will be equipped with cupola and skip-hoist charger.

CONSTANTINE, MICH. — City is completing plans for $63,636 waterwork improvement project, including new pumping equipment and distributing mains. PWA has allotted grant on construction. Consulting engineer, F. F. Van Tuyl, Ann Arbor, Mich.

KALAMAZOO, MICH. — City has plans under way for waterworks improvements to include a 750,000-gallon and a 450,000-gallon elevated water storage tank, and booster pumping station. Cost to be about $206,990, including PWA grant. C. W. Cole, South Bend, Ind., consultant.

MIDLAND, MICH. — City, E. R. Stein, mayor, plans to construct a sewage disposal system costing $246,000. PWA has allotted grant of $110,700 on project. Shoecraft, Drury & McNamee, Ann Arbor, Mich., consulting engineers.

SAGINAW, MICH. — City, L. P. Cookingham, manager, proposes to extend its waterworks system at cost of $347,047, of which PWA has approved a grant of $156,621. Consulting engineer, F. C. Gordon, 53 West Jackson boulevard, Chicago.

Illinois

CHICAGO — Pullman Standard Car Mfg. Co., 79 East Adams street, plans to build a one-story shop costing $1,000,000. United Engineers & Constructors Inc., 111 West Washington street, engineers.

WILMINGTON, ILL. — City, J. C. Thompson, mayor, plans to construct a sewage treatment plant costing $55,550 on which PWA has granted an allotment. McCoy and Mulford, Chicago Heights, Ill., consulting engineers.

Indiana

COLUMBUS, IND. — Cummins Engine Co. has awarded contract for a one-story, 80 x 200-foot brick, steel and concrete factory to Austin Co., Euclid avenue, Cleveland.

DYER, IND. — Town, W. N. Gettler, clerk, is making plans to extend and improve its waterworks at cost of about $26,000; PWA grant approved on project. R. Seeley, Hammond, Ind., engineer.

SOUTH BEND, IND. — City is making plans to extend and improve its sewerage system. Cost estimated at $1,118,181; PWA grant of $503,181 approved in work. F. J. Anderson, city engineer.

Alabama

ALEXANDER CITY, ALA. — City is receiving bids for the construction of a sewerage disposal plant costing about $75,000. Roberts & Co., Atlanta, Ga., engineer.

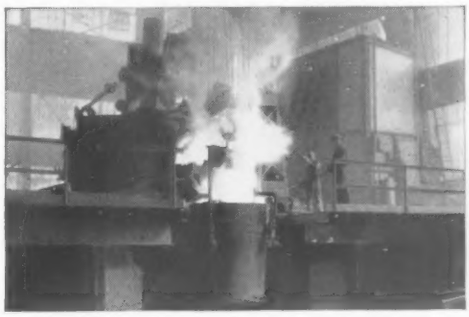
FT. PAYNE, ALA. — City will receive bids Nov. 30 for construction of a pro-

THE STARTING POINT *of*

NF

FORGINGS

CARBON-ALLOY AND SPECIAL BASIC ELECTRIC STEELS



COMPLETE control of all processing from selection of the melting charge to the finished condition is the N. F. & O. *guarantee of quality* in forgings furnished to your specifications — Smooth Forged, Hollow Bored, Rough or Finish Machined.

Die Blocks and Piston Rods

NATIONAL FORGE AND ORDNANCE CO.

IRVINE, WARREN COUNTY, PENNA., U. S. A.

posed electrical distribution system for which available funds total $115,000. PWA has approved allotment. James M. Todd, New Orleans, engineer.

District of Columbia

WASHINGTON — Yards and docks, navy department, is taking bids on eight 40-ton and five 30-ton locomotive cranes, with either gasoline or diesel engines, for use at the navy yards at Mare island, Calif.

WASHINGTON — Navy department, bureau of supplies and accounts, takes bids to Nov. 22 for pneumatic grinders (schedule 4806); stencil cutting machine (inventory 4821); engine lathe (schedule 4827); milling machine (schedule 4829); and boring machine (schedule 4832).

OUR AIM is to render service. A little more complete... more hospitable... more pleasing ... than even the most exacting guest expects.

CHAS. H. LOTT
Manager

Every Room Outside with Private Bath

Single from $2.50
Double from $4.00

DETROIT LELAND HOTEL

CASS AT BAGLEY AVE.
GARAGE IN CONNECTION

Georgia

AMERICUS, GA. — Sumter Electric Membership Corp. has been allotted $282,000 by REA to enable erection of 314 miles rural power transmission lines in seven counties.

ATLANTA, GA. — Municipal waterworks, W. Z. Smith, general manager, has received $215,189 PWA grant and will probably ask for bids early in December on plant improvements and additions. Project includes installation of a pumping unit, two 550-horsepower stoker-fed boilers and one 175-kilowatt turbogenerating unit. J. N. Eley, Citizens & Southern Bank building, is city representative.

CAIRO, GA. — City, R. A. Bell, mayor, is receiving bids for construction of sewerage disposal plant, including control building and pumping plant and costing $26,000. Consulting engineers, Wiedeman & Singleton, Atlanta, Ga.

MOULTRIE, GA. — Colquitt County Rural Electric Co. has been granted $125,000 REA allotment to construct 137 miles of power lines in three counties.

ROME, GA. — City has prepared specifications for waterworks improvements to cost about $435,000; plans ready for distribution by Nov. 25. Roberts & Co., Atlanta, Ga., engineer.

North Carolina

RALEIGH, N. C.—City, George Iseley, mayor, will take bids Nov. 23 for waterworks improvements divided in six sections and estimated to cost $180,000. Roy Williamson, commissioner of public works; William Olsen, Raleigh, consulting engineer. (Noted Sept. 26.)

SHELBY, N. C. — City, Harry Woodson, mayor, receives bids Nov. 22 for construction of two 500,000-gallon water tanks with steel towers and concrete foundations. D. R. S. Frazier, Shelby, consulting engineer.

South Carolina

GEORGETOWN, S. C. — American Cyanamid & Chemical Corp., H. L. Derby, president, New York, has purchased 72-acre site and buildings and will immediately begin new construction and remodeling work. First unit will be a plant for producing sulphate of alumina, used in paper making and water purification.

MYRTLE BEACH, S. C. — City has plans maturing for construction of $300,000 sewer system; has marketed bond issue of $165,000 and applied to PWA for grant of $135,000.

SPARTANBURG, S. C. — Commissioners of public works, W. W. Griffin, chairman, will accept bids Nov. 28 for constructing additions to the water supply system; funds available estimated at $389,566. (Noted Sept. 26.)

Louisiana

RAYVILLE, LA. — City, W. T. Jones, mayor, receives bids Nov. 22 for construction program, including waterworks improvements, wells, reservoir, pump house, diesel engine, electrical machinery, power plant building and oil treatment plant. C. A. Peerman, West Monroe, La., engineer.

West Virginia

RAVENWOOD, W. VA. — PWA has approved grant to the city in proposed improvements to its waterworks, including electrogenerating plant, wells, pumps, water softening equipment, chlorinator and accessories costing total of about $50,000.

Virginia

APPOMATTOX, VA. — Town, C. S. McDearmon, mayor, takes bids Nov. 21 for constructing sewage disposal plant estimated to cost $55,000. J. B. McCrary Co. Inc., Atlanta, Ga., engineer.

Missouri

ST. LOUIS — Carter Carburetor Corp. has awarded contract for one-story storage building costing $20,000 to the Austin Co., 1198 Arcade building.

Arkansas

PRAIRIE GROVE, ARK. — City, D. E. Rieff, recorder, will receive bids Nov. 21 for construction of projected sewer system and sewage treatment plant. W. R. Spencer, Fayetteville, Ark., consulting engineer.

Oklahoma

PONCA CITY, OKLA. — Continental Oil Co., Dan Moran, president, has awarded $1,250,000 contract for part of gasoline refinery improvement program to M. W. Kellogg Co., 225 Broadway, New York. Plan to spend additional $250,000 during building to revise and improve equipment of steam system, pumping units and electrical systems. Work scheduled to begin before Jan. 1.

Wisconsin

BONDUEL, WIS. — PWA has approved grant to city on its proposed construction of a water supply and sewerage system to cost $76,363. Lytle & Smith, Appleton, Wis., engineers.

GREEN BAY, WIS. — Western Refrigerator Line Co., Northern building, has awarded general contract for construction of new car repair building here to Wisconsin Bridge & Iron Co., Milwaukee.

Minnesota

BENSON, MINN. — City, S. A. Berg, clerk, opens bids Nov. 28 for a 600-kilowatt diesel generating unit, auxiliary equipment and other improvements to the municipal light and power plant. Burlingame, Hitchcock & Estabrook Inc., Minneapolis, consulting engineers.

LITCHFIELD, MINN.—Village, W. V. Martinson, recorder, will take bids in about three weeks on construction of $55,884 improvement and additions to its boiler plant, including installation of 40,000-pound per hour boiler. Charles Foster, Duluth, consulting engineer.

LOWRY, MINN.—PWA has approved a grant to city, Frank Fisek, clerk, in the construction of a proposed waterworks system consisting of well, pump house, turbine, tank and distributing system, at cost of $29,900. F. P. Schaub, Glenwood, Minn., consulting engineer.

MADISON, MINN. — City, James Hayden, clerk, opens bids Dec. 1 for construction of an addition to the municipal light and power plant to cost $185,000. Project involves new 600-kilowatt diesel generating unit, 350-horsepower boiler and coal and ash-handling equipment. Perkins & McWayne, Sioux Falls, S. Dak., engineers. (Noted Sept. 26.)

MINNEAPOLIS — City will soon take bids for construction and equipping of a one-story addition to its equipment and machine shop, including new equipment rooms, new boiler and machinery additions. Total cost, $185,000. Fred Paul, city engineer.

NEW RICHLAND, MINN.—PWA has approved grant to the city in the projected construction of a sewage system

AS NEW AS TOMORROW!

Just out of its swaddling clothes, and "rarin' to go," this recently engineered "3C" Bulletin 102, Type HL Hatchway Limit Switch is stanchly built to stand rough and tumble use in Heavy Duty Operation.

Arranged for side or bottom mounting, it occupies only a small space, but is used in a wide variety of applications.

It features ½"x⅝" Graphited Bronze Bearings that need no lubrication—Abnormally Large Electrical Clearances—Cast Iron Weatherproof Enclosure—Position of Operating Arm Adjustable—Nitralloy Bearings at Finger Pivotal Points—Double Break Silver to Silver Contacts—Unlimited Overtravel.

BULLETIN 102 TYPE HL HATCHWAY LIMIT SWITCH COVER REMOVED

ASK OUR NEAREST OFFICE FOR COMPLETE DETAILS

THE CLARK CONTROLLER CO.
1146 EAST 152nd STREET • CLEVELAND, OHIO

AKRON • BALTIMORE • BIRMINGHAM • BOSTON • BUFFALO • CHICAGO
CHATTANOOGA • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT
LOS ANGELES • MINNEAPOLIS • NEW ORLEANS • NEW YORK • PHILADELPHIA
PITTSBURGH • ST. LOUIS • SAN FRANCISCO • SEATTLE • TULSA • TORONTO

LOCOMOTIVE CRANES
CRAWLER CRANES
SHOVELS

OHIO

THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS OHIO

For Low Cost Industrial Heating—

"We Guarantee Results"

F. & D. Producer Gas Systems

Using Bituminous and Anthracite Coals Raw and Scrubbed Gas for Displacing Oil, City and Natural Gas, Coal and Coke in Furnaces of all descriptions.

Flinn & Dreffein Co., 308 W. Washington St., Chicago, Ill.

THOMSON

HEADQUARTERS FOR
Manual and Automatic SPOT, SEAM, BUTT, FLASH, PROJECTION, PORTABLE GUN, FABRIC and SPECIAL RESISTANCE WELDING PRODUCTION EQUIPMENT

Write for FLASHES, a monthly magazine of Resistance Welding News and information. Sent free on request by

THOMSON-GIBB ELECTRIC WELDING CO.
General Offices: 163 PLEASANT ST., LYNN, MASS.

Quality Dependability Service

ON YOUR NEXT ORDER

Made to order Cold Upset and Rolled Thread products by Progressive are assurance against time and labor troubles in assembly operations. It will pay you to consult our specialists before placing your next order. Their suggestions may show you the way to greater fastening economy.

QUALITY PROMCO BRAND

The PROGRESSIVE MFG. CO.
TORRINGTON · · · CONNECTICUT

costing $102,000 and including pump house, clarifiers, filters, settling tank, sludge bed and chlorination equipment. Druar & Milinowski, St. Paul, consulting engineers.

PRESTON, MINN.—City, H. R. Spies, mayor, has PWA grant on construction of power plant improvements including new electric generating station, and costing total of $46,200. G. M. Orr & Co., Minneapolis, engineer.

SOUTH ST. PAUL, MINN. — City, E. L. Sloan, recorder, will take bids immediately for construction of a $960,550 sewage disposal plant consisting of treatment plant, pump station, regulating chambers and chemical treating equipment; PWA allotted $432,248 on project. Plant will handle waste from three packing plants as well as municipal sewage. W. H. Cropsey, city engineer. (Noted Sept. 26.)

STEWARTSVILLE, MINN.—Village, G. W. Ellis, clerk, has received PWA grant in the construction of a complete sewage treatment plant costing $52,600. Druar & Milinowski, St. Paul, engineers.

ST. JAMES, MINN.—REA has allotted $225,000 grant to the South Central Electric association, Edward Meier, superintendent, to finance construction of about 206 miles rural power transmission lines in two counties.

HOTEL
McALPIN

"A Great Hotel"

from $2.50 a day, single
$4 and $4.50 double

Broadway at 34 St., N. Y.

Under KNOTT Management
JOHN J. WOELFLE, Manager

Texas

AUSTIN, TEX.—Lower Colorado river authority, Fritz Englehard, chairman of board of directors, 806 Littlefield building, receives bids Nov. 21 for power intake apparatus to be installed at the Austin dam.

BRADY, TEX. — REA has allotted $186,000 grant to McCulloch County Rural Electric Co-operative Inc. in the proposed construction of 242 miles of rural power transmitting lines in four counties.

CENTERVILLE, TEX. — City, J. Sullivan, mayor, is holding a special election immediately to vote on a bond issue to finance construction of a projected sanitary sewer system, including distribution system and treatment plant costing total of $30,000.

GRAPELAND, TEX. — City, G. C. Kennedy, mayor, is completing plans for constructing sewerage system on which PWA has approved loan and grant totaling $45,000 and voters approved bond issue. H. L. Thackwell, Longview, Tex., engineer.

NEW BRAUNFELS, TEX. — Lone Star Wool & Mohair Mills, H. A. Wagenfuer, president, Krause building, will probably ask for bids about Dec. 15 for remodeling present building and installing new machinery and equipment at cost of about $250,000.

Kansas

PAOLA, KANS.—Voters will pass Dec. 5 on $175,000 bond issue to finance construction of a new power plant and distribution system costing $240,000. W. B. Rollins & Co., Railway Exchange building, Kansas City, Mo., consulting engineer. (Noted Oct. 24.)

North Dakota

DICKINSON, N. DAK.—PWA has approved a grant to the city, D. D. Mars, auditor, in the construction of a sewage disposal plant to cost $121,015. L. W. Veigel, Dickinson, engineer.

South Dakota

JAVA, S. DAK.—City, A. C. Shlepp, mayor, has received PWA grant in the construction of a waterworks with steel tank, pumps, turbine and distributing lines, costing $29,090. A. S. Mannes, Box 265, Aberdeen, S. Dak., consulting engineer.

Nebraska

AURORA, NEBR.—REA has allotted $216,000 to the Hamilton County Rural Public Power district, Thomas Williamson, president, to finance construction of 199 miles of lines in three counties.

COLUMBUS, NEBR.—Loup River Public Power district, D. J. DeBoer, chief engineer, will be ready for bids about Nov. 25 on erecting of 220 miles transmitting lines in two counties. Reed & Simpson, Abilene, Kans., consultants.

FREMONT, NEBR.—PWA has approved grant to board of public works, J. R. Henry, chairman, in construction of waterworks improvements costing $23,111. Black & Veatch, Kansas City, Mo., consultants.

LYONS, NEBR.—City, J. E. Buckley, chairman of board of trustees, has PWA grant in construction of proposed purification, water softening and iron removal plant to cost $27,595. Robert Fulton, Lincoln, Nebr., consulting engineer.

Iowa

CASCADE, IOWA—PWA has allotted grant to city, John Ludwig, mayor, to finance projected construction of a diesel generating plant and distributing system costing $110,000. Young & Stanley, Muscatine, Iowa, consultants. (Noted Sept. 26.)

CHARITON, IOWA—City, Noel Cloud, mayor, has PWA grant in the construction of a 250,000-gallon elevated steel tank and other water system improvements at cost of $50,000. William Perkins, Chariton, consulting engineer. (Noted Sept. 12.)

MT. AYR, IOWA—City, George Wright, mayor, plans to construct a waterworks and electric power line costing total of $62,013 and has been allotted grant by PWA. Consulting engineer, Hall Engineering Co., Centerville, Iowa. (Noted Oct. 3.)

ROLFE, IOWA—PWA has approved grant to the city, John Brinkman, mayor, in the construction of a diesel engine generating plant, with distribution system, to cost $99,000. Young & Stanley, Muscatine, Iowa, consulting engineers.

Idaho

GEORGETOWN, IDAHO — City plans to drill wells, construct distribution mains, steel storage tank and purchase other water equipment costing $36,364. PWA has approved grant and loan. L. M. Porter, Caldwell, Idaho, consulting engineer.

Pacific Coast

GOLD HILL, OREG.—City invites bids Nov. 25 for three sections of $42,000 project including water system repairs, sewer improvements and construction of sewage disposal plant.

PORTLAND, OREG. — Bonneville authority, Failey building, is taking bids due Nov. 29 on switching equipment, including 13 large circuit breakers, for principal substations along route of Bonneville power network in Washington and Oregon. Cost estimated at $750,000.

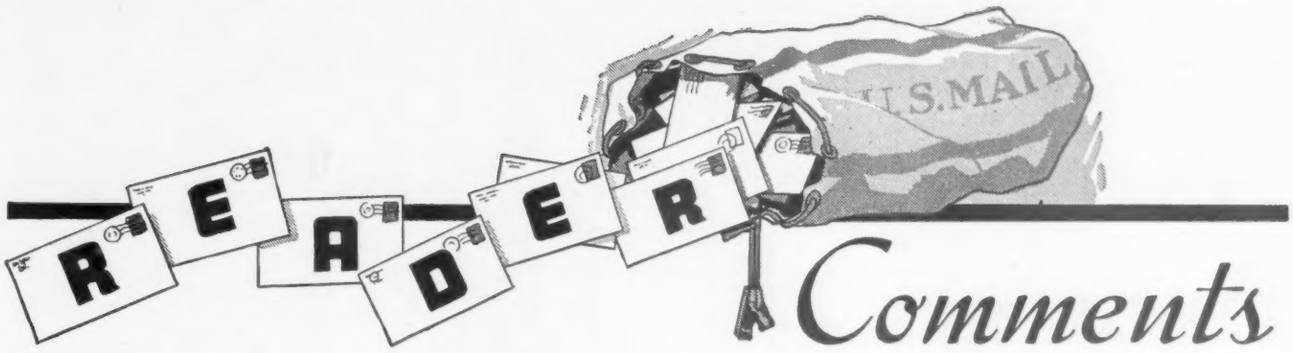
Canada

CALGARY, ALTA. — Anglo-Canadian Oil Co. Ltd., F. P. Byrne, managing director, will take bids early in 1939 on a new refinery of 5,000,000-barrel daily capacity and costing $1,000,000.

VANCOUVER, B. C.—Westminster Marine & Engineering Works Ltd., 736 Granville street, is making plans to construct brass and iron foundry and machinery manufacturing plant costing $40,000. Engineer, in care of owner.

PARRY SOUND, ONT. — Shiningtree Gold Mines Ltd., 171 Yonge street, Toronto, soon accepts bids for construction of a milling plant to cost $40,000.

MOOSE JAW, SASK.—City soon takes bids on replacement of pipe lines and construction and equipping of new chlorinating plant at its reservoir; total cost about $100,000. A. N. Ellson, city engineer.



Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Steel House Comes Nearer

To the Editor:

The steel house is on its way. Instant replacement of time-honored building materials is too much to expect in view of the innate conservatism of humanity. The first automobile looked like a buggy without the thills. Even the dashboard was retained. The present streamlined design was unthinkable at the start of the self-propelled carriage. Wood made the wheels and the frame of the body. Thousands of autos are still being operated which were built before the all-steel body and wheels came into general use.

Various designs of steel or partly steel houses are being worked out and the answer will be found in some combination of these as time goes on. Matters of cost will be solved and gradually styles will be evolved that will meet approval of those who now are opposed to the appearance of present models.

Construction of the Colonial Village at Clairton, Pa., (STEEL, Nov. 21, p. 38) is a long step forward in practical application of new ideas. It uses steel where it will make the structure better without increasing cost, in an effort to give low-cost housing with comfort, even luxury. With quantity production many economies are possible and the experiment has a wider possibility of attaining popular approval.

Frontier is a currently popular word to describe any pioneering move that pushes against preconceived ideas in any situation, that reaches out into the relatively unknown and seeks to supplant the established forms.

Probably acceptance of the steel house will continue to encounter much the same resistance that was met in design of the automobile, the railroad car and locomotive and the airplane. But there are sufficient men with imagination to overcome this and produce something that will meet all requirements.

It is an interesting study to watch developments in new fields, and the acceptance of novel ideas when they have had time to become more commonplace. I believe we will see the steel house in some form taking its place in everyday home building.

ARCHITECT

Pittsburgh

American Labor Benefited

To the Editor:

To those of us who have no training in foreign trade it would seem from what we read of the new trade agreements with Canada and Great Britain that industry in the United States has benefited from the door of opportunity being opened further.

It seems to me that reduction of Great Britain's import duties from 20 to 15 per cent on a large class of manufactured articles, typewriters, business machines, electrical equipment, refrigerators, air conditioning equipment and household appliances broadens opportunity for foreign sales. These articles afford employment for American workers at the high wage rates prevalent in this country.

Labor and transportation all the way from the mine to the end of the assembly line will profit from whatever increase in sales of these finished products may result from these agreements.

At any rate, it is of greater importance that manufactured articles be exported than that lower duties be offered on raw materials in which labor has a much smaller stake. Of course, in the long run, whatever nation buys from us must sell an equal value of its own goods but the total effect will be to stimulate general exchange of goods and consequently greater activity in production. At least, that is the way it looks to me.

OBSERVER

Cleveland.

Likes G.M. Wage Loan Plan

To the Editor:

Effort of General Motors to equalize income of workers by loans during periods of idleness, to be repaid by work when the active season resumes has some interesting angles. In the first place the employer advances the money to the employe without contributions by the latter to establish a fund. This argues a high degree of confidence in the good faith of the worker.

A second feature is that this plan will transfer to the company's shoulders a burden most often borne by the small tradesman, who extends credit during slack periods and is repaid when earning is resumed.

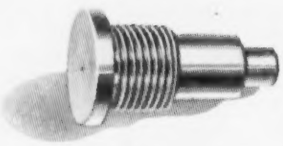
While the effect of this plan will not be to increase total annual earnings it will render the fluctuations less violent and give the worker a steadier financial standing, enabling him to budget his income with some degree of accuracy.

In an industry as highly seasonal as automobile manufacture such a plan offers attractive results in steadiness of income where it is impossible to avoid fluctuations in employment.

In some smaller concerns where the seasonal factor is less marked similar plans have worked out well and results in the General Motors experiment will be watched with interest. It should do much to strengthen morale of wage earners and inspire confidence in the good will of the employer.

MECHANIC

Detroit.



In fabricating this part from BAL-CUT, an increase in production of 20% was shown over the former screw stock used.

Performance figures continue to come in from users of BAL-CUT Cold Finished *leaded steel*, showing sensational results in automatic screw machine operations.

A report on a bushing, formerly made of SAE X-1112 at 24 pieces per hour and a total cost of $.071 each, shows an increase of production to 45 pieces per hour with BAL-CUT X-1112 at a cost of $.045 each—net saving 36%.

An automotive bushing fabricated from SAE X-1314 at 156 parts per hour costing $.028 each is now made on the same machine with BAL-CUT at 288 parts per hour, reducing the cost to $.023 per part—saving 18%!

These tests on Bessemer and Open Hearth screw stocks prove the economy of substituting equivalent grades of BAL-CUT Leaded Steel to gain increased machinability.

Try a test run of BAL-CUT on your next job—and let it prove its merit in your shop, as it has done in hundreds of others. Available in all standard SAE analyses from distributors' warehouse stocks from coast to coast.

COLD DRAWN BARS
●
GROUND SHAFTING
●
LEADED STEELS
●
SCREW STOCK
●
EXTRA WIDE FLATS
●
ALLOY STEELS

BETTER MADE STEELS
LABORATORY TESTED

BLISS & LAUGHLIN, INC.

HARVEY, ILL. *Sales Offices in all Principal Cities* BUFFALO, N.Y.